

JVC

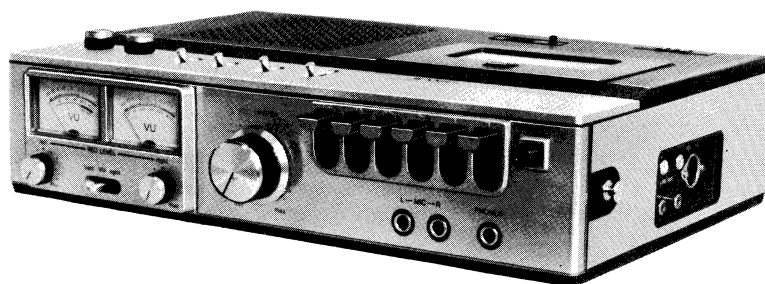
SERVICE MANUAL

MODEL

CD-1635

CD-1635 A/B/E/U

PORTABLE STEREO CASSETTE DECK



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Specification

Type	: Portable stereo cassette deck	Output jacks	: Output jack: 2 Output level; 500mV (fixed) Output impedance; 2.2k Ω Matching load impedance; 50k Ω or more
Track system	: 4-track, 2-channel		
Cassettes	: C-30, C-60, C-90		
Tape speed	: 4.8 cm/sec		
Frequency response	: CrO ₂ tape: 25~18,000Hz (45~16,000Hz $\pm$ 3dB) Standard tape: 25~17,000Hz (45~15,000Hz $\pm$ 3dB)		
S/N	: 52dB (at the peak level) The S/N is improved by 5dB at 1kHz and by 10dB above 5kHz with ANRS on.	Recording connector:	: Min. input level; 11mV(–37dBs) Input impedance; 9.2k Ω Output level; 500mV Output impedance; 2.2k Ω
Wow and flutter	: 0.08% (WRMS)	Speaker	: Output; 1.2W (distortion 10%) Impedance; 4 Ω Diameter; 10cm
Crosstalk	: 65dB	Power supply	: DC 9V ("D" size cell x 6) AC power: 120V, 60Hz for CD-1635 220V, 50Hz for CD-1635E 240V, 50Hz for CD-1635B/A 100,110~120,200,220~230V, 50/60Hz for CD-1635U External DC power: 8–16V
Harmonic distortion	: 1.2% (standard tape)	Power consumption	: 10W(CD-1635) 9W(CD-1635A/B/E/U)
Bias	: AC bias (95kHz)	Battery life	: Approx. 12 hours of continuous recording (on super type batteries) Approx. 5 hours of continuous recording (on regular type batteries)
Erase	: AC erasure	Dimensions	: 14-1/4(width) x 3-7/8(height) x 9-1/2(depth)
Heads	: 2 heads SA head for recording and playback and ferrite head for erasure	Weight	: 11.5 lbs (including 6 batteries)
Motor	: DC coreless motor		
Recording time	: 2 x 30 minutes with the C-60 cassette		
Fast wind time	: 90 sec (with the C-60 cassette) per track		
Rewind time	: 90 sec (with the C-60 cassette) per track		
Semiconductors	: IC; 5 Transistor; 37 Diodes; 32 SCR; 1		
Input jacks	: MIC jack: 2 Max. sensitivity; 0.14mV(–75dBs) Matching impedance; 200 Ω ~10k Ω Input jack: 2 Max. sensitivity; 78mV (–20dB) Input impedance; 100k Ω		

Features

High Performance
 Power-saving Design
 Coreless Motor
 Built-in ANRS (Automatic Noise Reduction System)
 SA (Sen Alloy) Head
 Full Auto Stop
 Tape Select Switches

High-linearity Amplifier
 High-precision Mechanisms
 Input Select Switch and Microphone Attenuator
 Master Recording Volume Control
 External DC power Connection Terminal
 Built-in Large Speaker

Controls and Connections

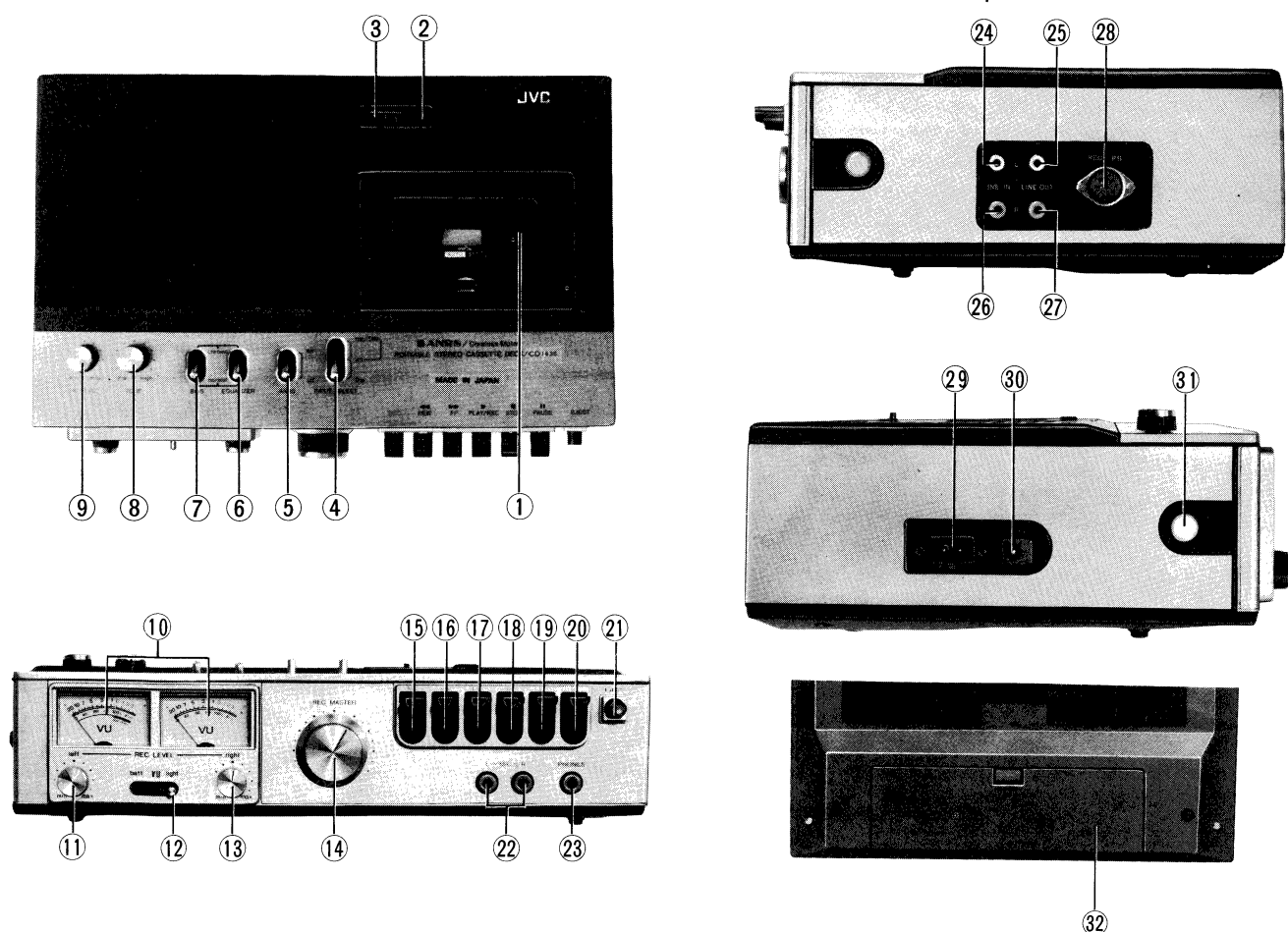


Fig. 1

- | | |
|---|---|
| 1 Cassette door | 17 Fast forward button [FF] |
| 2 Reset button | 18 PLAY/REC button [PLAY/REC] |
| 3 Tape counter | 19 STOP button [STOP] |
| 4 Input selector switch [INPUT SELECT] | 20 PAUSE button [PAUSE] |
| 5 ANRS switch [ANRS] | 21 EJECT button [EJECT] |
| 6 Equalizer switch [EQUALIZER] | 22 Microphone jacks [L-MIC-R] |
| 7 Bias switch [BIAS] | 23 Headphone jack [PHONES] |
| 8 Speaker tone control [TONE] | 24 Left auxiliary input jack [LINE IN] |
| 9 Speaker volume control [PB LEVEL] | 25 Left auxiliary output jack [LINE OUT] |
| 10 Level meters | 26 Right auxiliary input jack [LINE IN] |
| 11 Left recording level control [REC LEVEL] | 27 Right auxiliary output jack [LINE OUT] |
| 12 Check switch [batt VU light] | 28 Record/playback DIN jack [REC/PB] |
| 13 Right recording level control [REC LEVEL] | 29 AC input terminal [AC] |
| 14 Master recording volume control [REC MASTER] | 30 DC input terminal [DC 12V] |
| 15 Record button [REC] | 31 Shoulder belt holder |
| 16 Rewind button [REW] | 32 Battery cover |

New Techniques

1. Sen Alloy Head

The Sen Alloy Head has been developed as a result of improvement of the core material in addition to the overall improvements in the head.

- * The eccentric wear of the head has been reduced to such an extent that this head gives as long service as the ferrite head.

As Sen dust (super hard magnetic material) is used in the part which contacts the tape, the absolute wear of the head has been decreased, and this head has solved to problem of eccentric wear which is characteristic of the permalloy head.

Accordingly, this head gives long periods of excellent service.

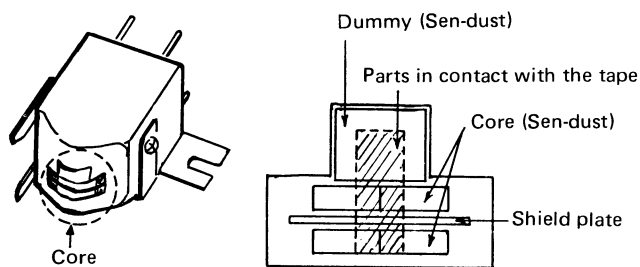
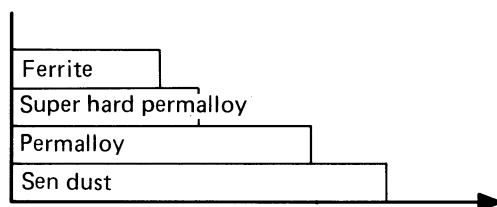


Fig. 2 (A)

Fig. 2 (B)



Max. flux density (G)

Fig. 3

- * Distortion on recording has been decreased to a considerable extent.

If the maximum flux density of the core material is low, the magnetic resistance of the core, especially near the gap, increases so that the flux flows out of the core and is not concentrated near the gap. As a result, the recording field is disturbed so that the recording quality is impaired. In this respect, the Sen alloy head is more advantageous than the ferrite and permalloy heads, because Sen dust has a higher maximum flux density.

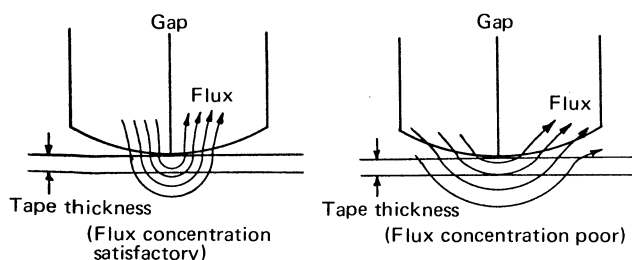


Fig. 4 (A)

Fig. 4 (B)

2. Coreless Motor

The coreless motor which does not use an iron core in the rotor offers the following advantages.

1. As no iron loss occurs to the coreless motor, it is highly efficient and consumes far less power so that it increases the battery life.
2. As a low current is used, the brush life is increased and electric noise is reduced.
3. As the inertia moment of the rotor is low, motor rolling is decreased so that an excellent speed control response is obtained.

3. Power Stabilizing DC-DC Converter

There are various types of DC-DC converters.

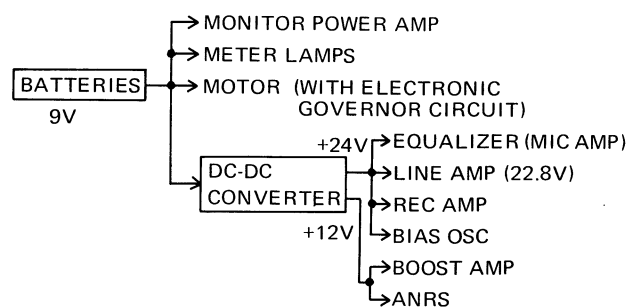
This deck uses a single-transistor DC-DC converter circuit to stabilize the power (Fig. 5).

The single-transistor DC-DC converter circuit has such outstanding advantages as oscillation of an asymmetric waveform and easy variation of the duty-ratio by changing the time constant of the base (feedback) circuit.

In this deck, zener diode ZD20 in Fig. 6 compares the voltage with the reference signal, and the base current flows to X13 so that the impedance between C and E is controlled. The pulse width is varied between about $3\mu\text{sec}$ and $6\mu\text{sec}$, and the pulse interval between about $6.5\mu\text{sec}$ (150kHz) and $14\mu\text{sec}$ (70kHz) to stabilize the secondary voltage (Fig. 7).

In consequence, oscillating transistors X14 and X15 always perform a perfect switching operation regardless of variations in input voltage and load current so that a high efficiency of DC-DC conversion is maintained.

Power Supply Circuit of CD-1635A/B/E/U



Two secondary voltages of +24V and +12V are used in this deck. They are selectively used according to the signal level in order to save power.

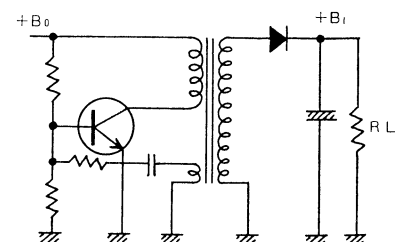


Fig. 5

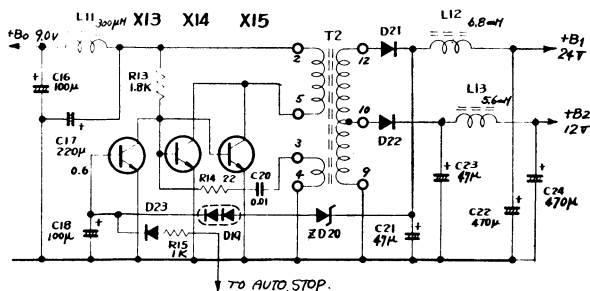


Fig. 6

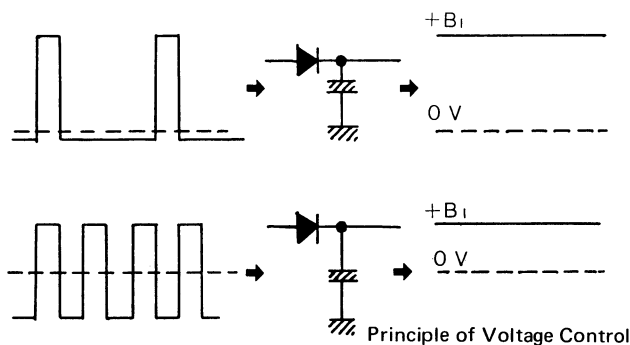
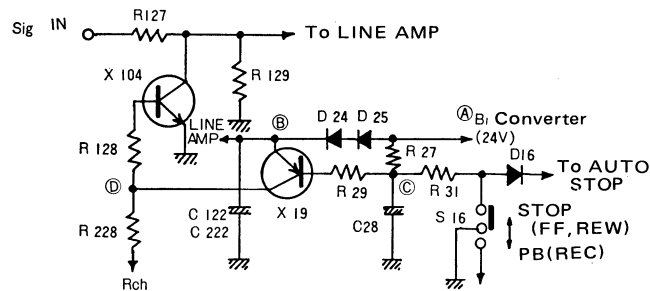


Fig. 7

4. Muting Circuit

As power supply to the amplifier circuit is mechanically turned on and off in this deck, noise during the rise time of the circuit cannot be mechanically muted. To suppress noise during the rise time especially of the first stage, a muting circuit with a delay time of about 1 sec is used in this deck.

When the machine is switched to play (or record), muting switch S16 slides to close PB contact and the power switch is turned on simultaneously. As a result, +B1 is supplied to point (A) from the converter. The voltage at point (B) also rises through D24 and D25, but the voltage rise at point (C) is delayed because of the time constant of C28 (and R27 and R29). Accordingly, the base current flows to X19 and the contact between C and E is closed so that a voltage identical to that at point (B) is applied to point (D), thereby energizing X104 (204) and muting the signal. After about 1 sec, the voltage at point (C) rises to the same level of 24V as that at point (A). As the voltage at point (B) is 22.8V, X19 becomes de-energized so that muting is discontinued. When the machine is switched to stop, S16 closes and the voltage at point (C) is decreased by R31 with a relatively low time constant, but a voltage is retained by C122 and C222 at point (B) so that a voltage is applied to point (D). As a result, muting is continued even after the converter stops oscillating. When the machine automatically stops, the potential at point (A) rapidly falls before S16 returns to STOP so that noise is produced in the amplifier circuit. In this machine, however, the potential at point (C) is rapidly decreased by D16 the moment the solenoid becomes actuated and the signal is muted by the voltage retained at point (B).



3. The reed sensitivity varies with the length of the lead wire and the shape of the lead, because the lead wire possesses a similar action to the reed. When replacing the reed switch, take care not to greatly change the length of the lead wires.

6. Auto-Stop Circuit

Advantages

1. This electronic auto stop system consumes far less power.
2. The energy stored in the capacitor of the amplifier circuit is utilized to actuate the solenoid so that no battery power is used by the auto stop system. As the DC-DC converter stabilizes the power voltage, the force of attracting the solenoid does not vary with the battery voltage.
3. As the machine stops in a very short time after tape stop, the current for locking the mechanism does not increase, saving battery power, and a tape tangle is avoided.
4. Even if the auto stop system fails to disengage the drive mechanism, it works time and again till the drive mechanism is disengaged.

Principle of Operation

While the tape is running, reed switch S_r is turned on and off repeatedly, but $X1$ is briefly energized during the plus cycle (S_r OFF) of the differentiation pulse of $C1$. The potential at point (C) is increased by the time constant of $C2$ (as well as $R2$, $R3$ and $R4$) but discharged rapidly as $X1$ becomes conductive. As a result, the potential at point (C) is held to a low level (0.6V or less).

On the other hand, $X2$ and $X3$ constitute a Schmidt circuit. They are off when V_{TH} is below 0.6V. V_{TH} rises beyond 0.6V within 1 second of tape stop so that $X2$ and $X3$ become conductive and $C3$ triggers the SCR, thereby causing solenoid SOL to become actuated.

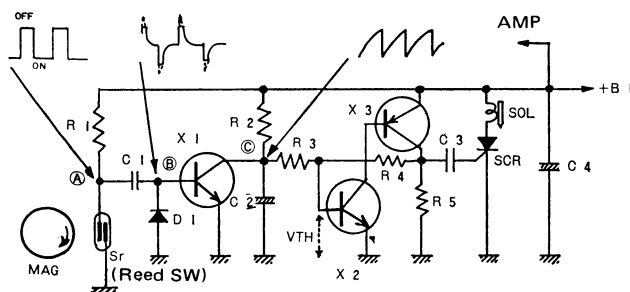


Fig. 12 Principle of the Auto Stop Circuit

In the actual circuit (Fig. 13), $X18$ is supplied by the primary of the converter (that is, battery power), and the solenoid is supplied by the secondary of the converter (that is, $+B1$ of the amplifier power source). The reason for the use of different power sources for the auto stop system is that SCR must be triggered time and again. This system performs a series of operations as outlined below.

When $X18$ becomes conductive, triggering SCR, $R15$ and $D23$ apply $+DC$ to converter voltage control transistor $X13$ in an instant to stop the converter. This serves to prevent $+B1$ from being built in the secondary of the converter to turn off SCR when the drive mechanism is not disengaged. If this safeguard is not provided, SCR is not turned off and secondary $+B1$ is nearly short-circuited (DC resistance of the solenoid, 8Ω) so that the oscillating transistor of the converter is burnt. When a current is discharged to the solenoid, $+B1$ is rapidly decreased to zero to turn off SCR. If the drive mechanism is not disengaged and power switch $S14$ is on, it is necessary to make preparations to trigger SCR again. After triggering of SCR by $X18$, $X17$ and $X18$ hold so that the potential of $C27$ gradually increases, turning on $X16$ in about 1.5 seconds. As a result, $C26$ is discharged, and V_{TH} falls below 0.6V, releasing $X17$ and $X18$. Then the converter starts oscillating again. $C27$ is now rapidly discharged by $D15$ and $R25$ and $+B1$ is rapidly built up at the same time. With preparations for SCR triggering thus made, $C26$ starts to be charged to trigger SCR. This cycle of operations repeats itself till the drive mechanism is disengaged and $S14$ is turned off. $D16$ mutes the signal in auto stop, and $D14$ discharges $C25$ and provides protection for B-E of $X16$.

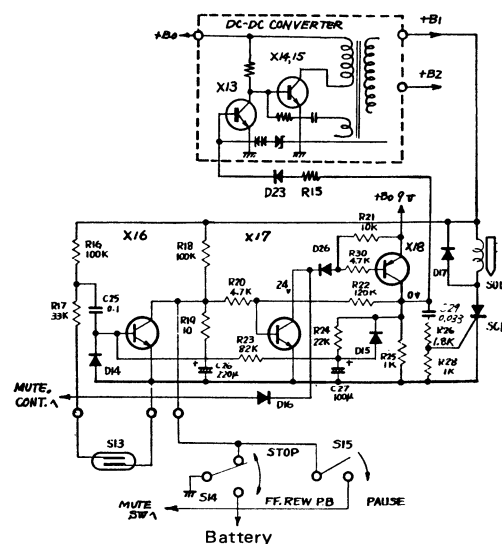


Fig. 13

Disassembly

The CD-1635A/B/E/U which features a compact design and high performance uses miniature-sized parts which are closely arranged. Use special care when servicing it.

Enclosure

Parts Name	Procedure	Ref. No.	Remarks
Bottom cover	1. Remove battery case and take out batteries. (6 batteries of UM-1 type) 2. Remove screws (6 pcs). 3. Remove battery wires (2 pcs)	Fig. 14 ①	One screw (3φ, 8mm) is used inside battery case. Orange and black.
Control knobs	Pull them out toward you or upwards.		PB level and Tone control Recording level controls (right and left) Master recording volume control
Top panel	1. Press [EJECT] button and remove screw (1 pc) inside cassette compartment. 2. Remove screws (3 pcs) in front. 3. Remove rear tapping screws (4 pcs). 4. Remove speaker wires (2 pcs). 5. Pull out set clear of panel.	Fig. 16 ② Fig. 15 ③ Fig. 15 ④	Black (2φ, 4mm) Black (3φ, 6mm) Black (3φ, 3mm)
Front panel	1. Remove tapping screws (4 pcs). 2. Pull front panel off set toward you.	Fig. 17,18,19,21 ⑤	(3φ, 6mm)

Electric parts

Parts Name	Procedure	Ref. No.	Remarks
Circuit board of main amplifier	1. Remove board fixing screws (4 pcs). 2. Remove screws of transistor bracket (radiating plate) (2 pcs). Shield board also gets out of place when these screws are removed.	Fig. 15 ⑥ Fig. 19 ⑦	Purple Purple (side)
ANRS circuit board	1. Remove board fixing screws (4 pcs). Shield board also gets out of place when these screws are removed.	Fig. 15 ⑧	Purple
Switch circuit board	1. Remove board fixing screws (2 pcs). 2. Pull blinds (4 pcs) out of switch shaft. 3. Remove switch fixing screws (4 pcs). 4. Remove nut and washer of variable resistor (2 locations). 5. Pull out circuit board from rear.	Fig. 20 ⑨ ⑩ ⑪	Purple, 3φ, 6mm Purple, 2.6φ, 6mm Playback level, tone
Power transformer	Remove screws, washer and nuts (2 each).	Fig. 22 ⑫	

Mechanical parts

Parts Name	Procedure	Ref. No.	Remarks
Mechanical parts	1. Remove ANRS circuit board. 2. Remove muting bracket. 3. Remove screws (3 pcs) on side bracket side. 4. Remove circuit board fixing screws (2 pcs).	Fig. 23 (13) (14)	
Motor	1. Remove wires (2 pcs) soldered to motor circuit board. 2. Remove capstan belt. 3. Remove screws (2 pcs) from motor 1 circuit board bracket. 4. Remove motor fittings (screws, whaser and bushes). (3 pcs each)	Fig. 23 (15) Fig. 24 (16)	Red and black Do not soil belt.
Pinch roller arm	1. Remove E-ring fixing pinch roller arm. 2. Remove pinch roller arm spring (for pressure adjustment).	Fig. 23 (17)	
Take-up reel (Right side)	1. Remove take-up reel holding E-ring. 2. Remove take-up reel from shaft.	Fig. 23 (18)	
Supply reel (Left side)	1. Remove supply reel holding E-ring. 2. Remove supply reel from shaft.	Fig. 23 (19)	
Flywheel	1. Remove capstan belt. 2. Remove flywheel holder (2 screws). 3. Remove take-up idler arm (1 E-ring). 4. Pull out flywheel.	Fig. 24 (20) Fig. 24 (21)	Do not soil belt.

[NOTE] Almost all the mechanical parts can be adjusted and replaced when only the ANRS circuit board is removed.

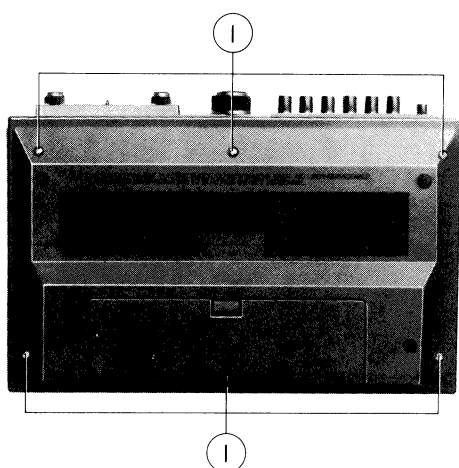


Fig. 14

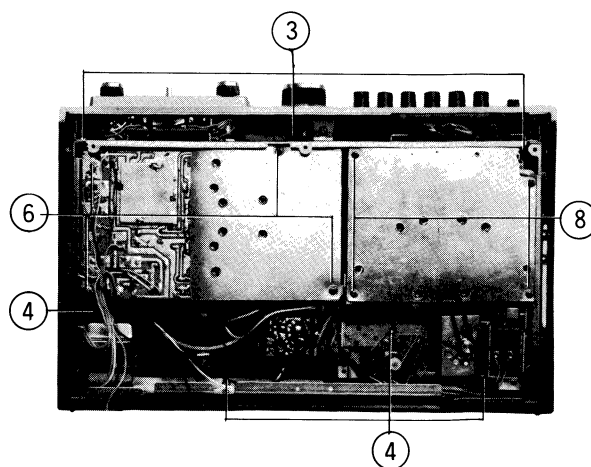
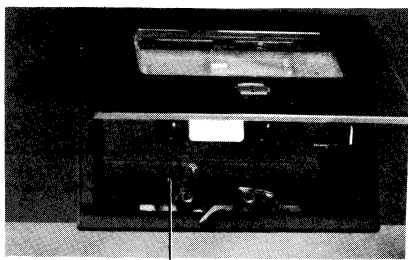


Fig. 15



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Fig. 16

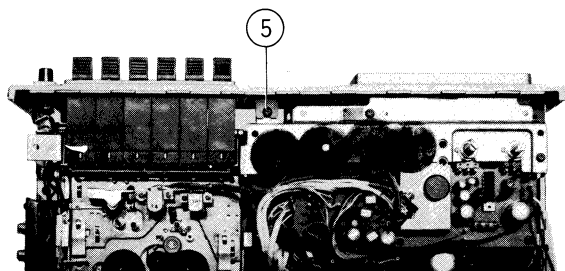


Fig. 17

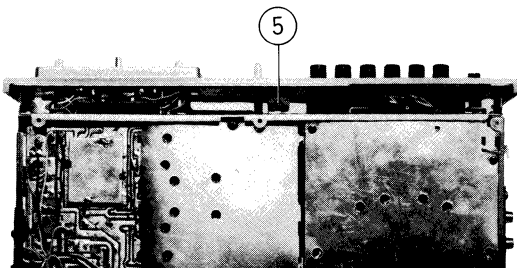


Fig. 18

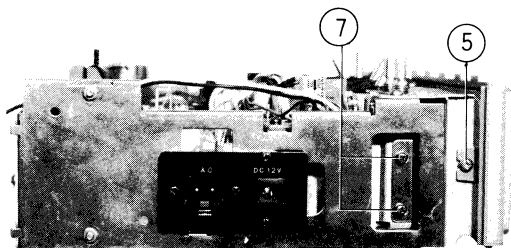


Fig. 19

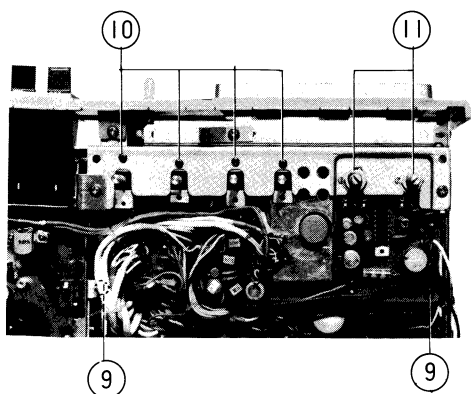


Fig. 20

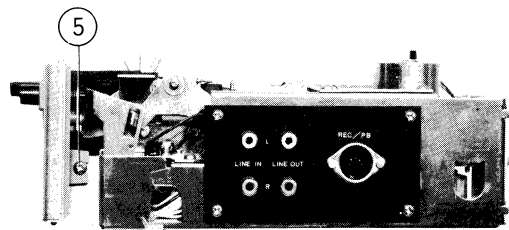


Fig. 21

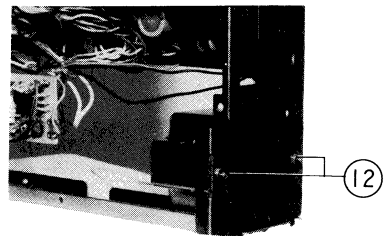


Fig. 22

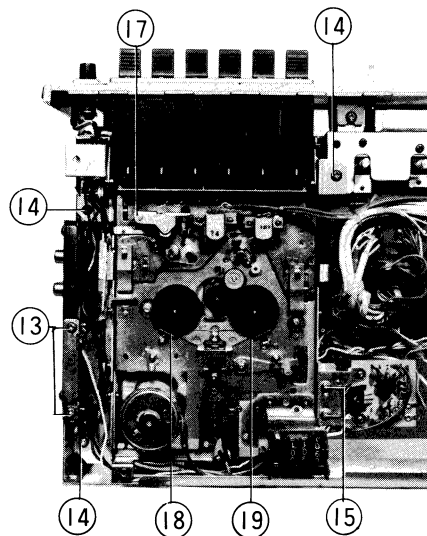


Fig. 23

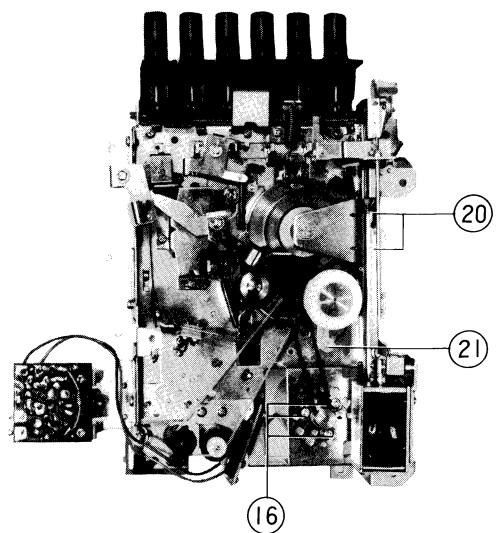


Fig. 24

Head Replacement and Adjustment

Replace the recording and erasing heads in case of excessive wear, broken wire or excessive magnetization.

Part	Screws to be removed
Recording head	① , ②
Erasing head	③ , ④

Adjust the azimuth of the heads, when they are replaced. As the monitor amplifier of this deck reproduces the mixing signal of the right and left channels, the azimuth of the heads should be adjusted in the following manner.

1. Connect [LINE OUT L] to the vertical axis of an oscilloscope and [LINE OUT R] to its horizontal axis.
2. Play the head azimuth adjusting tape (VTT653, 10kHz).
3. Obtain Lissajous' figure on the oscilloscope and adjust screw ② so that the phase becomes zero (that is, one beam appears, the right end up).
Other method of adjustment: Connect a measuring apparatus to the speaker terminal and adjust screw ② till its output is maximized.
4. Lock screw ② with an adhesive agent after adjustment. It is necessary to adjust the reproduction level, recording bias current and recording signal current, when the heads are replaced.

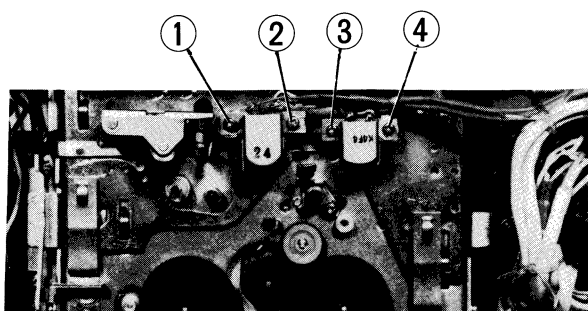


Fig. 25

Cleaning and Lubrication

1. Cleaning

Clean the heads, capstan and pinch roller which contact the tape. If the heads are soiled, the sound quality is impaired. Clean them with a cloth moistened with alcohol, benzene or trichlorethylene.

2. Lubrication

Reoil the idler and pinch roller shafts once or twice a year by dripping one drop or two of DTE oil or machine oil.

Do not oil liberally or oil will fly around, causing speed variation.

Main Parts To be Adjusted

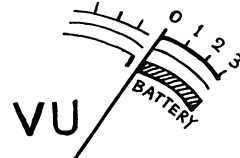
Adjusting Apparatus and Parts

1. Audio-frequency oscillator
2. Attenuator
3. V.T.V.M. (measuring AC in milivolts)
4. Reference tape

5. Recorded reference tape (QP-12 C521V standard tape), TP-18 C802 C401R (CrO₂ tape) or equivalent
6. Resistors 100 Ω (for measurement of the bias current) 600 Ω (for attenuator matching)

[Electric Parts]

No.	Item	Procedure	Part	Rating	Remarks
1.	Level meter deflection	1. Switch machine to record. 2. Apply signal of 1kHz to mic input terminal (about -60dB) or line terminal (about -10dB) and adjust recording volume control to obtain output of -3.5dBs at [LINE OUT]. 3. Adjust semifixed resistors R134 and R234 in this condition to obtain zero VU meter reading.	R134	VU meter reading: 0	The angle of meter deflection has been factory-adjusted, but should be adjusted when parts are replaced.
2.	Reproduction level	Adjust R115 and R215 to obtain zero VU meter reading using reference tape VTT-664 1kHz 16mM (old ref. no. TMT-6009). Set equalizer switch in "NORMAL" position and turn off ANRS switch when adjusting reproduction level.	R115	VU meter reading: 0	1. Adjust reproduction level when heads are replaced. 2. Make this adjustment after making sure level meter deflection angle is correct.
3.	Recording bias	1. Switch machine to record. 2. Connect a 100Ω resistor into the ground side wiring of the head. 3. Connect the AC V.T.V.M across the resistor, and measure its voltage. The diagram shows a recording machine with terminals labeled 'R/P HEAD' and 'INPUT'. A 100Ω resistor is connected between these two terminals. A V.T.V.M. (Vacuum Tube Voltmeter) is connected in parallel with the resistor to measure the voltage drop across it. The V.T.V.M. is labeled '(V.T.V.M)' and has a scale with a '0' mark. Fig. 26 If no measuring apparatus is available, check in the following way. Music sound is not sonorous in the high range on playback: bias current is too high. Music sound is also sonorous in the high range on playback but distorted: bias current is too low.	Standard tape: R555,557 CrO ₂ tape: R556,558 (BIAS ADJ)	Approx. 37mV Approx. 47mV	1. Adjust recording bias current when heads are replaced. 2. Use a measuring apparatus of excellent frequency characteristic. 3. Be sure to connect resistor to head terminal. It is recommended to check the following after adjustment. (ANRS $\rightarrow$ OFF) (Set EQ and BIAS switches according to type of tape used.) Obtain zero VU meter reading at 1kHz, attenuate signal by 20dB, record and play at 1 and 10kHz. Then adjust bias current so that measuring apparatus shows the same output at 1 and 10kHz. The graph plots 'LEVEL' on the y-axis against frequency on the x-axis, with markers for 1 KHz and 10 KHz. Three curves are shown: a rising curve labeled 'too low', a flat curve labeled 'most suitable', and a falling curve labeled 'too high'. The 'most suitable' curve is horizontal, indicating consistent output across the frequency range. Fig. 27

No.	Item	Procedure	Part	Rating	Remarks
4.	Recording level	A: Adjustment for normal tape (Use JVC reference tape.) 1. Switch machine to record. 2. Apply signal of 1kHz to MIC or AUX IN and make recording in such a way that VU meter reading is zero. 3. Adjust R142 and R242 till reproduction level is reduced to zero when the reference tape is played. B: Adjustment for CrO₂ tape (Use JVC reference tape.) 1. Switch machine to record. 2. Apply signal of 1kHz to MIC or AUX IN and make recording in such a way that VU meter reading is zero. 3. Adjust R138, and R238 till reproduction level is reduced to zero when the reference tape is played.	R142,242 (REC LEVEL NOR) R138,238 (REC LEVEL CHROM)		1. This adjustment is necessary when heads are replaced. 2. Make this adjustment after adjusting level meter deflection angle, reproduction level and recording bias current. 3. Set EQ and BIAS switches according to type of tape used. 4. Turn off ANRS switch.
5.	ANRS circuit	1. Disconnect power connection receptacle of bias oscillator so that oscillator does not operate. 2. Switch machine to record. 3. Apply signal of 1kHz, -10dB to LINE IN and adjust volume control so that output at LINE OUT is -0.5dBs. 4. Turn R335 and R435 (CONT GAIN) and R340 and R440 (DC BIAS) in the direction opposite to the marking. 5. Adjust R324 and R424 so that level does not change when ANRS is turned on and off, and turn on ANRS. 6. Apply signal of 1kHz, -50dB to LINE IN and adjust R340 and R440 so that output at LINE OUT is -35.0dBs. 7. Apply signal of 5kHz, -30dB to LINE IN and adjust R335 and R435 so that output at LINE OUT is -17.0dBs. 8. Repeat steps (5) through (7). 9. Connect receptacle of bias oscillator disconnected in step (1). 10. Play reference tape VTT-664 and adjust R302 and R402 so that level does not change when ANRS is turned on and off.	R324,424 (REC GAIN) R340,440 (DC BIAS) R335,435 (CONT GAIN) R302,402 (PB GAIN)		
6.	Battery check	1. Apply exactly 6V to battery contacts and switch machine to play or fast forward. 2. Turn down battery check switch in "CHECK" position and adjust so that meter pointer deflects to the other end of green area.			Do not mistake one polarity for the other.  Fig. 28

[Mechanical Adjustment]

1. Pressure of the Pinch Roller

Normal pressure: $400 \pm 50\text{g}$

If the pressure of the pinch roller is lower than the rating, move the spring wire to hole A. This decreases the pinch roller pressure by about 50g.

If the pressure of the pinch roller is higher than the rating, move the spring wire to hole C. This increases the pinch roller pressure by about 50g.

2. Auto Stop Mechanism

1. Switch off the machine.
2. Set the machines, the push-buttons up.
3. Pull out the rod and iron core of the plunger to the full extent by the spring (in the direction of the arrow). If the spring is not strong enough to do so, replace it.
4. Turn the nut till the clearance between the auto stop level and the cam protrusion is $0.5 \sim 1.0\text{mm}$.
5. Make sure that the machine stops when the iron core of the plunger is pulled by hand in the direction of the arrow (B) on playback, fast winding or rewinding.
6. Fully tighten the nut and lock it with an adhesive agent after adjustment.

The machine does not automatically stop, if the clearance is too wide or too narrow. If the machine does not automatically stop or automatically stops at improper time, check the following.

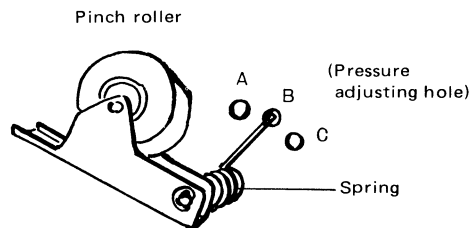


Fig. 29

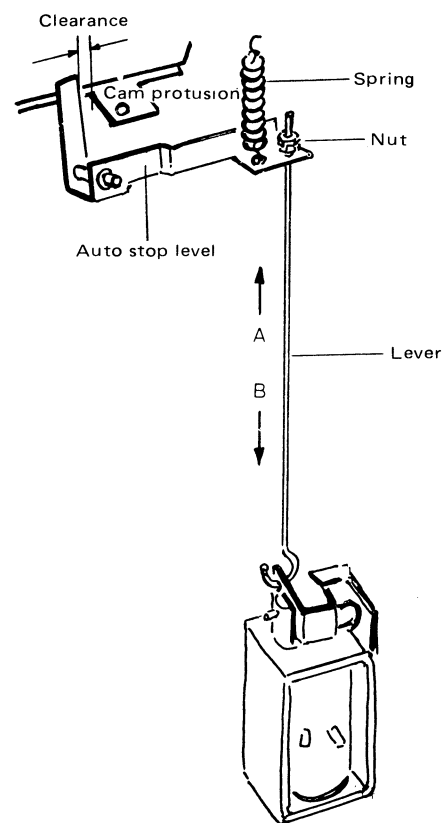


Fig. 30

Location of Trouble

Plunger	Check the action of the iron core of the plunger or replace it if defective.
Cam	Check the cam and spring action, and apply grease to the sliding surface of the cam.
Reed switch	Adjust the clearance between the reed switch and the magnet to 1-2mm, and replace the reed switch, if defective.
Magnet	Check the rotation of the magnet pulley and clean the counter belt. Replace it, if defective.
Electric circuit	See the section of "NEW TECHNIQUES" and "TROUBLESHOOTING GUIDE."

Block Diagram

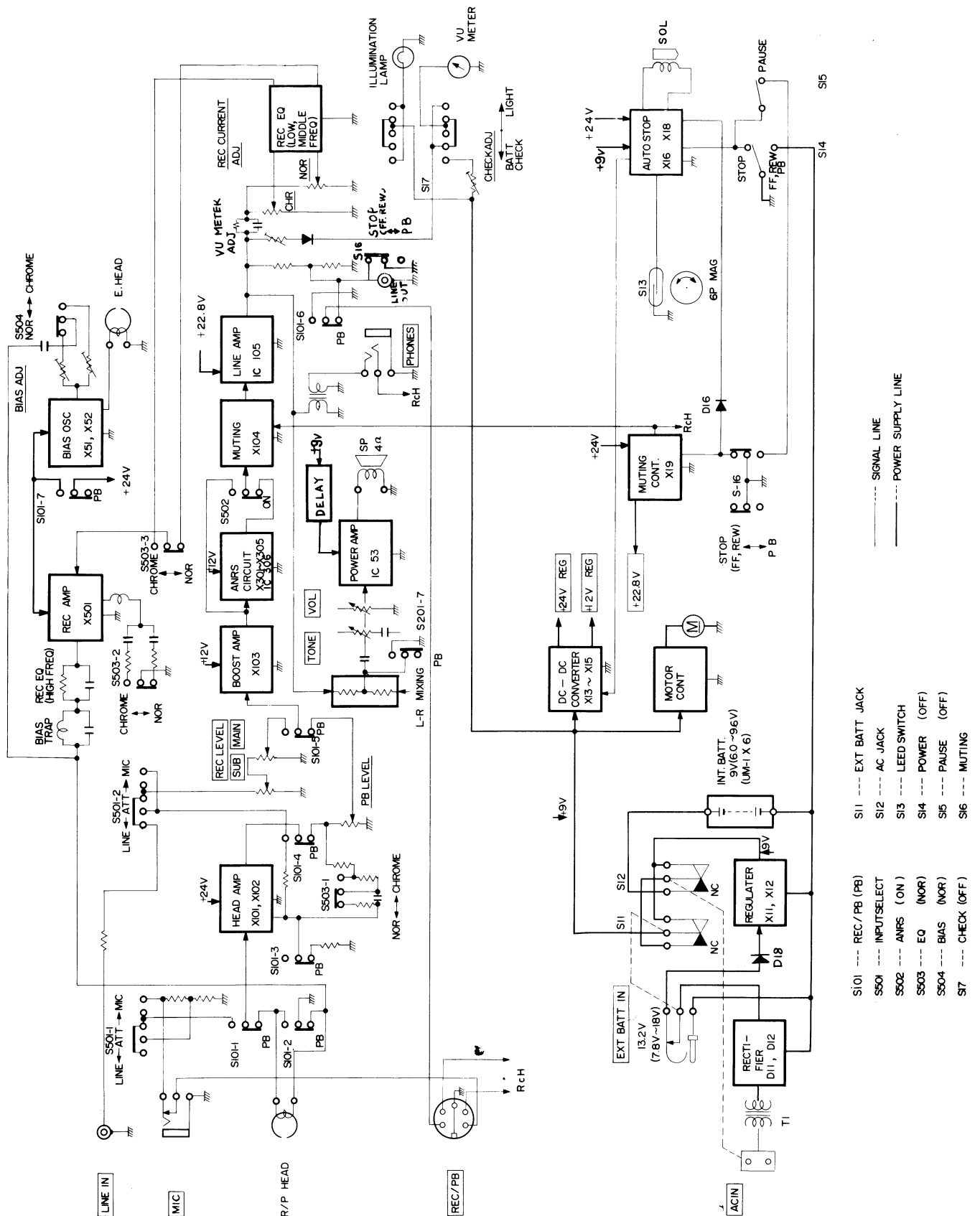


Fig. 31

Variable Resistor

R115, 215	P.B Level Adj.	50k Ω
R134, 234	Meter Adj.	1k Ω
R138, 238	REC Level Adj. (chrome)	20k Ω
R142, 242	" (normal)	20k Ω
R302, 402	ANRS P.B Gain Adj.	10k Ω
R324, 424	ANRS REC Gain Adj.	10k Ω
R335, 435	ANRS Control Gain Adj.	20k Ω
R340, 440	ANRS DC Bias Adj.	100k Ω
R556, 558	Bias Current Adj. (chrome)	100k Ω
R555, 557	" (normal)	200k Ω

Switch

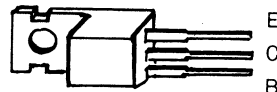
S101-1~7 (201)	REC-PB SW at "PB" mode
S301-1~4 (401)	"
S501-1~2 (601)	INPUT SW at "LINE" mode
S502 (602)	ANRS SW at "OFF"
S503-1~3 (603)	EQ SW at "NORMAL"
S504 (604)	BIAS SW at "NORMAL"
S17-1~2	CHECK SW at "OFF"
S11	EXT. BATT JACK
S12	AC JACK
S13	REED SW
S14	POWER SW at "OFF"
S15	PAUSE SW at "OFF"
S16	MUTING SW

Diode

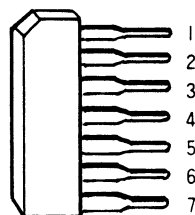
D101, 201	1S188AM
D102, 202	1S188AM
D103, 203	MA-150
D301, 401	1S188FM
D302, 402	1S188FM
D31	MA26W
D11-1, -2	T30155-001 or
D12-1, -2	V06B
ZD13	RD10E (1)
D14	MA150
D15	1S188AM
D16	MA150
D17, 18	T30155-001 or V06B
D19	MA26W
ZD20	RD-22E (1)
D21	MA162
D22	MA161
D23	MA150
D24, 25	MA150
D26	MA150
[SCR]	2SF656

Transistor

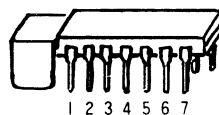
X101, 201	2SA721 (TU)
X102, 202	2SC1327 (TU)
X103, 203	2SC1327 (TU)
X104, 204	2SC828 (RS)
IC105, 205	TA7066P (B)
X301, 401	2SC1327 (TU)
X302, 402	2SC933FP
X303, 403	2SA721 (TU)
X304, 404	2SC1327 (TU)
X305, 405	2SC828 (R)
IC306, 406	TA7066P (BC)
X501, 601	2SC828A (R)
X51, 52	2SC828A (RS)
IC53	LA4102
X11	2SC828 (RS)
X12	2SD313 (DE)
X13	2SC828 (R)
X14	2SC1384 (R)
X15	2SC1384 (R)
X16	2SC828 (RS)
X17	2SC828A (RS)
X18	2SA564A (RS)
X19	2SA564A (RS)
X20	2SC1383 (RS)
X21	2SC828 (RS)



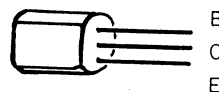
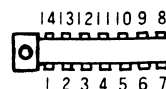
2SD313



TA7066P



LA4102



2SA721 2SC1383
2SC1327 2SC1384
2SC828
2SC828A
2SA564A
2SC933FP

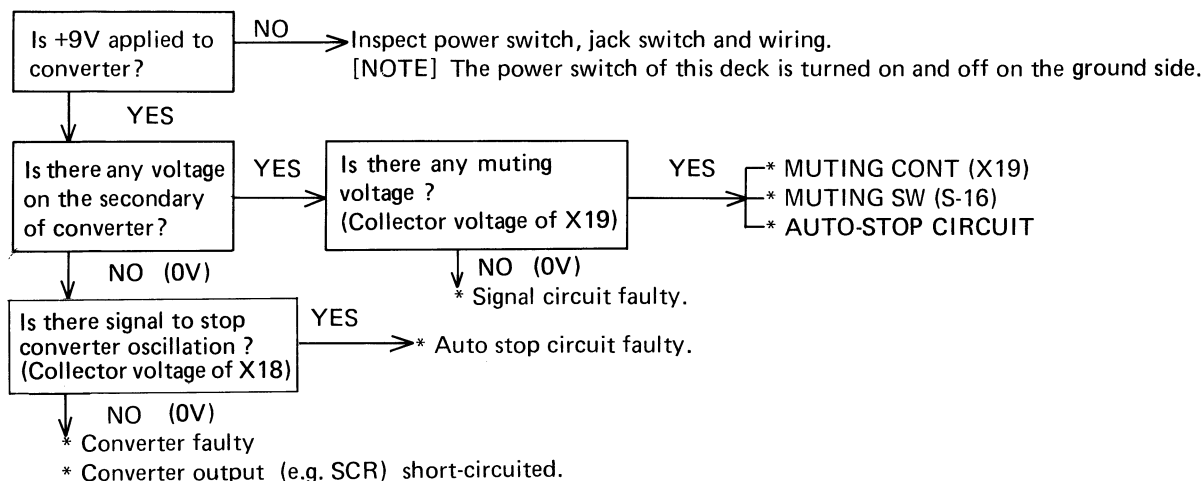
Fig. 32

Trouble Shooting Guide

1. Electric circuits

Mention will be made here of the special circuits of the CD-1635A/B/E/U. Other electric circuits can be checked in the same manner as in servicing ordinary cassette decks and amplifiers.

1-1 No Sound on Playback



1-2 Auto Stop Trouble

1. Machine does not automatically stop.

Make sure that the converter circuit is in normal condition and that +B is supplied to the auto stop circuit. Then check the waveform.

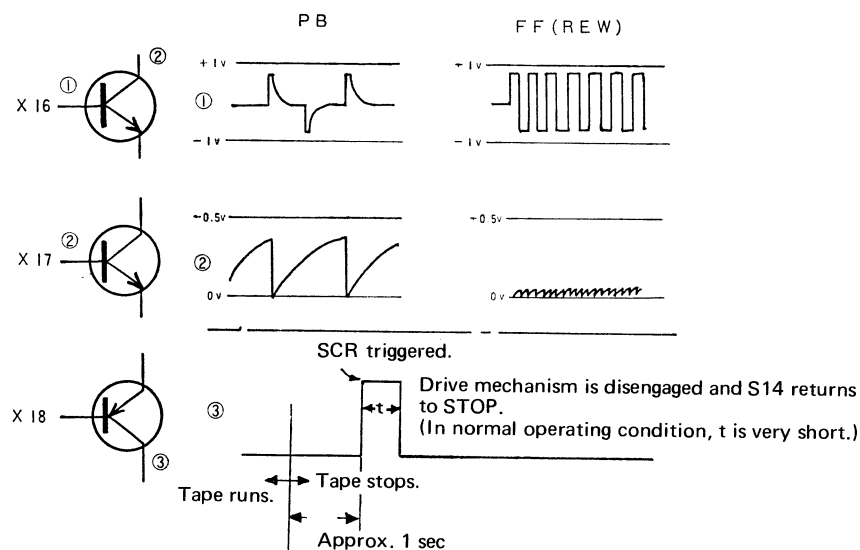


Fig. 33

2. Machine automatically stops at improper time.

In this case, X17, X18 and SCR are in normal condition. Check the waveform and reed switch.

3. Other troubles

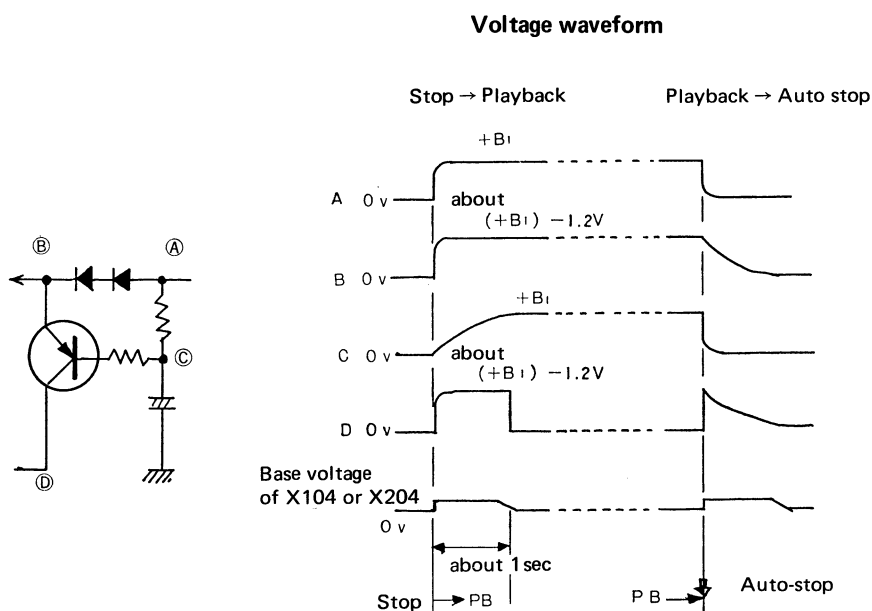
- * The solenoid becomes actuated once (and a hollow sound is heard through LINE OUT) when PB, FF or REW button is pressed. → S14 defective.
- * The machine automatically stops when PAUSE button is pressed in playback. → PAUSE switch defective.
- * The machine automatically stops at the end of tape in playback. → C26 defective Magnet pulley slips.

1-3 Converter Circuit

- * +B1 24V or +B2 12V is too high. → X13, D19 or ZD20 defective. (open)
- * No oscillation (no waveform at transistor and transformer terminals). → Primary winding of converter transformer defective. (X13,X14,X15,R14,C20 or transformer defective.)
Oscillation stop signal is fed from auto stop circuit.
- * Oscillator output voltage too low. →
 - 1) Load overcurrent.
 - 2) ZD20 defective.
 - 3) Oscillation stop signal is fed (from auto stop circuit).
 - 4) X13X14 or X15 defective.

1-4 Muting Circuit

Check the waveform of X19 when the machine is switched to play.



[WARNING]

1. Take care not to short-circuit the DC-DC converter output terminals and open-circuit +B1 and +B2 simultaneously when checking.
2. IC (LA4102) and (TA7066) have low output impedance terminals. Take care not to short-circuit them forward of the output coupling capacitor or they will be burnt in an instant.
3. Take care not to ground the collector of X18 and X19.

2. Mechanical Parts

2-1 Wow and Flutter

Check the following when wow and flutter are increased beyond the rating. If any rotating part is the source of increased wow and flutter, their cycle is synchronous with

(or multiples of) the cycle of part rotation. Play a 3000Hz reference tape and locate the trouble by listening the sound reproduced. First check the following rotating parts to make sure that they are not in contact with other part.

Part	Probable Cause	Remedy
Capstan flywheel	* Capstan shaft deflects. * Flywheel does not turn smoothly. (Shaft burnt, thrust worn, etc.)	Replace flywheel Adjust, flywheel holder. Clean recoil or replace flywheel.
Pinch roller	* Pinch roller does not turn true. (Pinch roller deformed or damaged. Foreign matter deposited on pinch roller.) * Pinch roller angle not properly adjusted. * Pinch roller pressure not properly adjusted.	Clean or replace pinch roller. Make pinch roller parallel with capstan. Adjust spring position.
Belt	* Belt swings. * Belt is dirty or slips.	Replace belt. Clean or replace belt.
Back tension	* Back tension is not constant or too high.	Replace back tension spring (under supply reel disc). Regrease.
Motor	* Motor shaft does not turn true. * Foreign matter deposited on motor.	Replace motor. Clean motor pulley.
Take-up idler arm	* Pulley swings. * Pulley turns roughly.	Replace take-up idler arm.

2-2 Tape Transport Trouble

Operation	Trouble	Remedy
PLAY	Take-up idler and reel disc slip. Take-up idler faulty. Take-up idler and capstan belt slip.	* Adjust or replace take-up idler spring. * Clean rubber or reel disc. * Replace take-up idler. * Clean capstan belt. * Replace capstan belt.
FF	FF idler slips. FF idler faulty. Capstan belt slips.	* Clean rubber of FF idler. * Adjust or replace spring. * Replace FF idler. * Clean or replace capstan belt.
REW	REW or FF idler slips. FF idler faulty. Capstan belt slips.	* Clean rubber of REW or FF idler. * Adjust or replace spring. * Replace FF idler. * Clean or replace capstan belt.

Standard torque

Take-up torque (at PLAY) 40~70 gr-cm

Fast forwarding torque more than 60 gr-cm

Rewinding torque more than 60 gr-cm

2-3 Noise and Vibration

Operation	Trouble	Remedy
PLAY	Noise of take-up idler or other rotating part.	* Replace take-up idler. * Regrease or reoil. * Replace part, if defective.
FF and REW	Noise of FF idler. Noise of REW idler. Noise of magnet pulley.	Regrease or reoil. Replace part, if defective.
Motor	Motor noise.	Replace part, if defective.

Circuit Board Parts

Main Amp Circuit Board

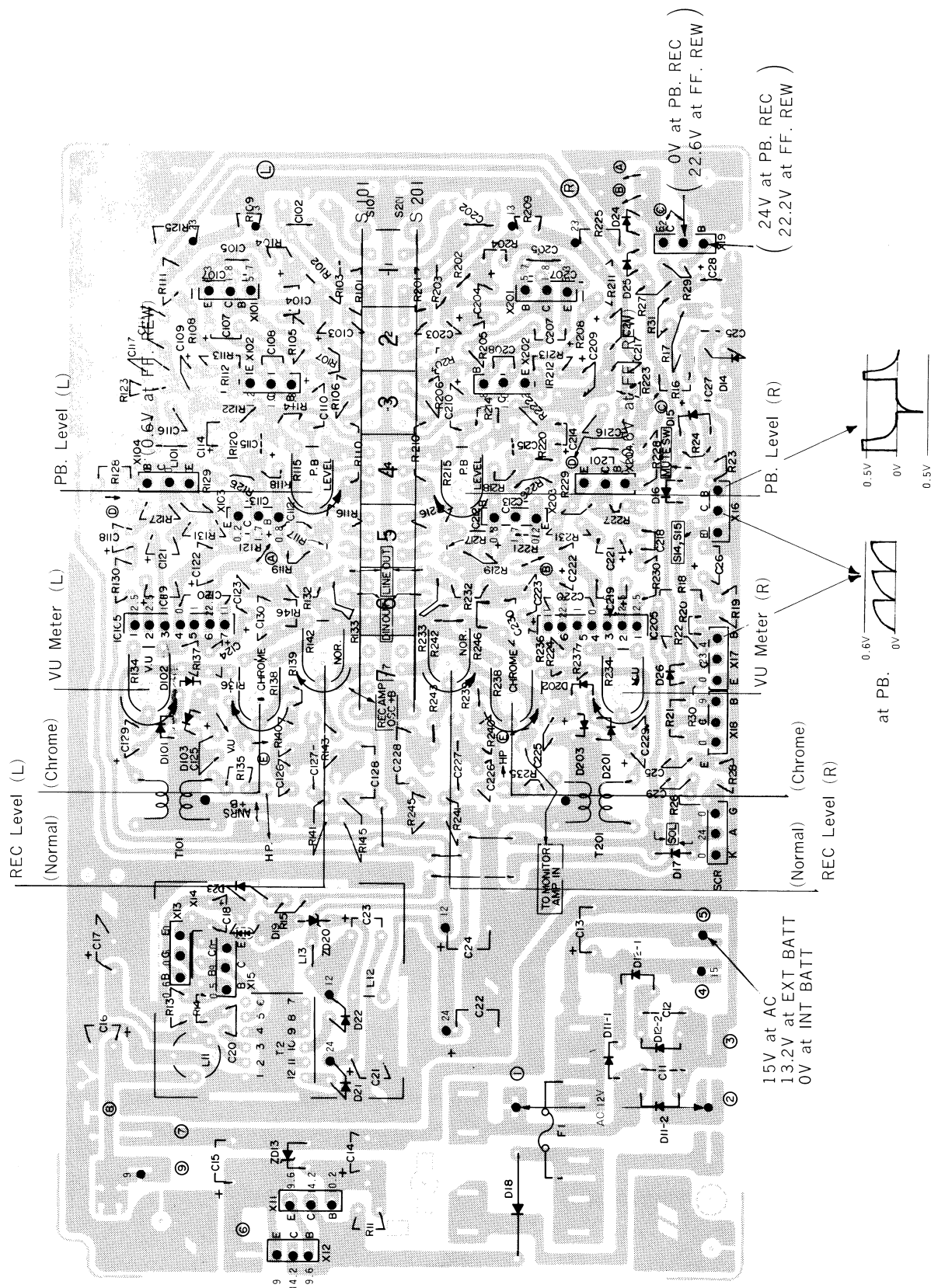


Fig. 35

Main Amp Circuit Board Parts List

Ref. No.	Part No.	Part Name	Remarks	Q'ty
(REC/PB AMP)	TAA271201-01	Circuit Board		1
	TAZ000331-01	Fuse Holder	CD-1635U, CD-1635	2
	TAZ000331-02	"	CD-1635E,B,A	4
	QMF60S1-R80	Fuse	0.8A CD-1635U	1
	QMF51A2-R80	"	0.8A CD-1635E,B,A	1
	QMF51A2-1R0	"	1A CD-1635E,B,A	1
	QFM61M2-R80	"	0.8A CD-1635	1
	TAZ000445-06	Fuse Seal	800mAT CD-1635E,B,A	1
	TAZ000445-01	"	1.0AT CD-1635E,B,A	1
S101,201	T31519-001	Slide Switch		1
R101,201,105,205,136,236	QRD143K-563	C. Resistor	56kΩ ¼W	6
R102,202	QRZ0019-104	"	100kΩ "	2
R103,203	" -823	"	82kΩ "	2
R104,204,108,208,118,218	QRD143K-274	"	270kΩ "	6
R106,206	" -221	"	220Ω "	2
R107,207	" -391	"	390Ω "	2
R109,209,114,214	" -104	"	100kΩ "	4
R110,210,123,223,128,228	" -473	"	47kΩ "	6
R111,211,127,227,139,239,145,245	" -103	"	10kΩ "	8
R112,212,116,216	" -102	"	1kΩ "	4
R113,213	" -121	"	120Ω "	2
R115,215	QVP8A0B-054	"	50kΩ B	2
R117,217	QRD143K-224	"	220kΩ ¼W	2
R119,219	" -823	"	82kΩ "	2
R120,220	" -472	"	4.7kΩ "	2
R121,221	" -561	"	560Ω "	2
R122,222,124,224,141,241	" -123	"	12kΩ "	6
R125,225	" -821	"	820Ω "	2
R126,226	" -183	"	18kΩ "	2
R129,229	" -154	"	150kΩ "	2
R130,230	" -471	"	470Ω "	2
R131,231	" -221	"	220Ω "	2
R132,232	" -332	"	3.3kΩ "	2
R133,233	" -682	"	6.8kΩ "	2
R143,243	" -153	"	15kΩ "	2
R134,234	QVP8A0B-013	V. Resistor		2
R135,235	QRD143K-2R7	C. Resistor	2.7Ω ¼W	2
R137,237	" -151	"	150Ω "	2
R138,238,142,242	QVP8A0B-024	V. Resistor		4
R140,240	QRD143K-822	C. Resistor	8.2kΩ ¼W	2
R146,246	" -272	"	2.7Ω "	2
C34	QCS11HP-103	Ceramic Capacitor	0.01μF	1
C102,202	QCS11HK-821	"	820pF	2
C103,203	QEE41EM-475	Tantal E. Capacitor	47μF 25V	2
C104,204	QEB41EM-476	LLC E. Capacitor	47μF "	2
C105,205	QCS11HK-471	Ceramic Capacitor	470pF	2
C106,206	QEB41HM-474M	E. Capacitor	0.47μF	2
C107,207	*QEB41EM-336	LLC E. Capacitor	33μF 25V	2
C108,208	QCS11HK-470	Ceramic Capacitor	47pF	2
C109,209	QEW41AA-107	E. Capacitor	100pF 10V	2
C110,210	QEB41EM-105	LLC E. Capacitor	1μF 25V	2
C111,211	QEW41EA-476	E. Capacitor	47μF "	2
C112,212	QEB41EM-475	LLC E. Capacitor	4.7μF "	2
C114,214	QEW41CA-106	E. Capacitor	10μF 16V	2
C115,215	QEW41AA-476	"	47μF 10V	2
C116,216	*QCS11HJ-820	Ceramic Capacitor	82pF	2
C117,217	*QFM41HJ-272	Mylar Capacitor	0.0027μF 50V	2
C118,218,123,223,124,224	QEW41EA-475	E. Capacitor	4.7μF 25V	6
C119,219,125,225	" -336	"	33μF "	4
C120,220	QFM41HK-102	Mylar Capacitor	1000pF 50V	2

Ref. No.	Part No.	Part Name	Remarks		Q'ty
C121,221	QEW41EA-106	E. Capacitor	10 μ F	25V	2
C122,222	" -107	"	100 μ F	"	2
C126,226	QFM41HK-333	Mylar Capacitor	0.033 μ F	50V	2
C127,227,128,228	" -154	"	0.15 μ F	"	4
C129,229	QEW41EA-335	E. Capacitor	3.3 μ F	25V	2
C130,230	QFM41HK-183	Mylar Capacitor	0.018 μ F	50V	2
L101,201	*TAC000324-05	Inductor	33mH		2
T101,201	T44944-001	H.P. Trans			2
X101,201	2SA721 (TU)	Transistor			2
X102,202,103,203	2SC1327 (TU)	"			4
X104,204	2SC828 (RS)	"			2
IC105,205	TA7066P (B)	IC			2
D24,25,103,203	MA150	Diode			4
D101,201,102,202	1S188AM	"			4
(Power Supply)					
R11	QRD143K-272	C. Resistor	2.7k Ω	¼W	1
C11,12	QCF12HP-103	"	0.01 μ F	"	2
C13	QEW41EA-108	E. Capacitor	1000 μ F	25V	1
C14	QEW41CA-477	"	470 μ F	16V	1
C15	QEW41AA-338	"	3300 μ F	10V	1
X11	2SC828 (RS)	Transistor			1
X12	2SD313 (DE)	"			1
D11-1,-2,12-1,-2	T30155-001 or	Diode			5
18	V06B				
ZD13	*RD10E (1)	Zener Diode			1
	*TAR271478	Heat Sink			1
	LPSP3006ZS	Screw			1
	WBS3000	T. Lock Washer			1
(DC-DC Converter)					
R13	QRD143K-182	C. Resistor	1.8k Ω	¼W	1
R14	" -220	"	22 Ω	"	1
R15	" -102	"	1k Ω	"	1
C16,18	QEW41AA-107	E. Capacitor	100 μ F	10V	2
C17	" -227	"	220 μ F	"	1
C20	QFM41HJ-103	Mylar Capacitor	0.01 μ F	50V	1
C21,23	QEW41EA-476	E. Capacitor	47 μ F	25V	2
C22,24	" -477	"	470 μ H		2
L11	*TAC000330-01	Inductor	300 μ H		1
L12	TAC000324-02	"	6.8mH		1
L13	* " -04	"	5.6mH		1
X13	2SC828 (R)	Transistor			1
X14,15	2SC1384 (R)	"			2
D19	MA26W	Varistor			1
ZD20	*RD22E (1)	Zener Diode			1
D21	*MA162	Diode			1
D22	*MA161	"			1
D23	MA150	"			1
T2	*TAZ271302-01	Converter Trans			1
	*TAS271405-01	Converter Case (A)			1
	*TAS271406-01	" (B)			1
(Auto Stop & Mute)					
R16,18	QRD143K-104	C. Resistor	100k Ω	¼W	2
R17	" -333	"	33k Ω	"	1
R19	" -100	"	10 Ω	"	1
R20,30,31	" -472	"	4.7k Ω	"	1
R21	" -103	"	10k Ω	"	1
R22	" -124	"	120k Ω	"	1
R27	" -153	"	15k Ω	"	1
R23	" -823	"	82k Ω	"	1
R24	" -223	"	22k Ω	"	1
R25,28	" -102	"	1k Ω	"	2
R26	" -182	"	1.8k Ω	"	1
R29	" -183	"	18k Ω	"	1

Ref. No.	Part No.	Part Name	Remarks	Q'ty
R32	QRD143K-122	C. Resistor		1
C25	QFM41HK-104	Mylar Capacitor	0.4 μ F 50V	1
C26	QEW41AA-227M	E. Capacitor	220 μ F 10V	1
C27	QEW41AA-107	"	100 μ F "	1
C28	QEB41EM-336	LLC E. Capacitor	33 μ F 25V	1
C29	QFM41HK-333	Mylar Capacitor	0.033 μ F 50V	1
X16	2SC828 (RS)	Transistor		1
X17	2SC828A (RS)	"		1
X18,19	2SA564A (RS)	"		2
D14,16,26	MA150	Diode		3
D15	1S188AM	"		1
D17	T30155-001 or V06B	"	(10D-1)	1
	2SF656	S.C.R		1
	E40516-001	Tab		9
	*QMC0657-001	Connector		1

Check Circuit Board

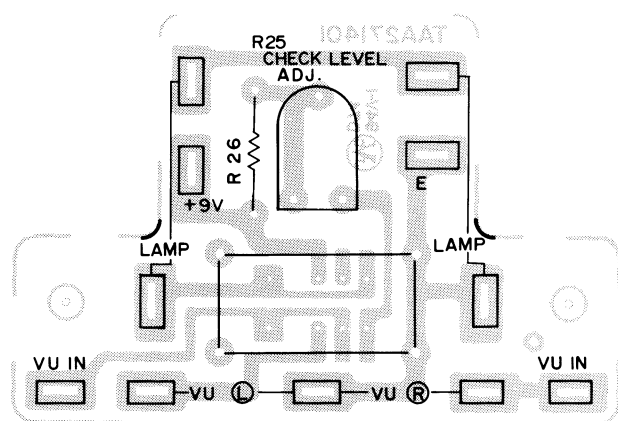


Fig. 36

Muting Circuit Board

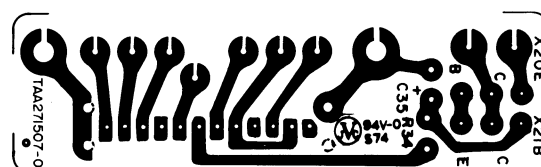


Fig. 37

Reed Switch Circuit Board

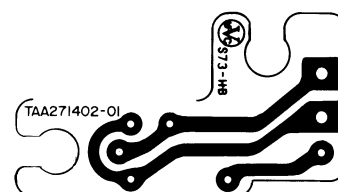


Fig. 38

Check Circuit Board Parts List

Ref. No.	Part No.	Part Name	Remarks	Q'ty
	*TAA271401-01	Circuit Board		1
	E40130-001	Tab		11
	*QSL2318-001	Lever Switch	for check	1
R25	QVP8A0B-024	V. Resistor		1
R26	QRD142K-124	C. Resistor	12k Ω 1/4W	1

Muting Circuit Board Parts List

Ref. No.	Part No.	Part Name	Remarks	Q'ty
	TAA271507-01	Circuit Board		1
	QSS4201-011	Slide Switch	for muting switch	1
R34	QRD143K-104	C. Resistor		1
C35	QEW41CA-106	E. Capacitor		1
X20	2SC1383 (RS)	Transistor		1
X21	2SC828 (RS)	"		1

Reed Switch Circuit Board Parts List

Ref. No.	Part No.	Part Name	Remarks	Q'ty
	TAA271402-01	REED SWITCH C. Board		1
R33	QRD142K-103	C. Resistor		1
C33	QCS11HK-101	Ceramic Capacitor		1

ANRS Circuit Board

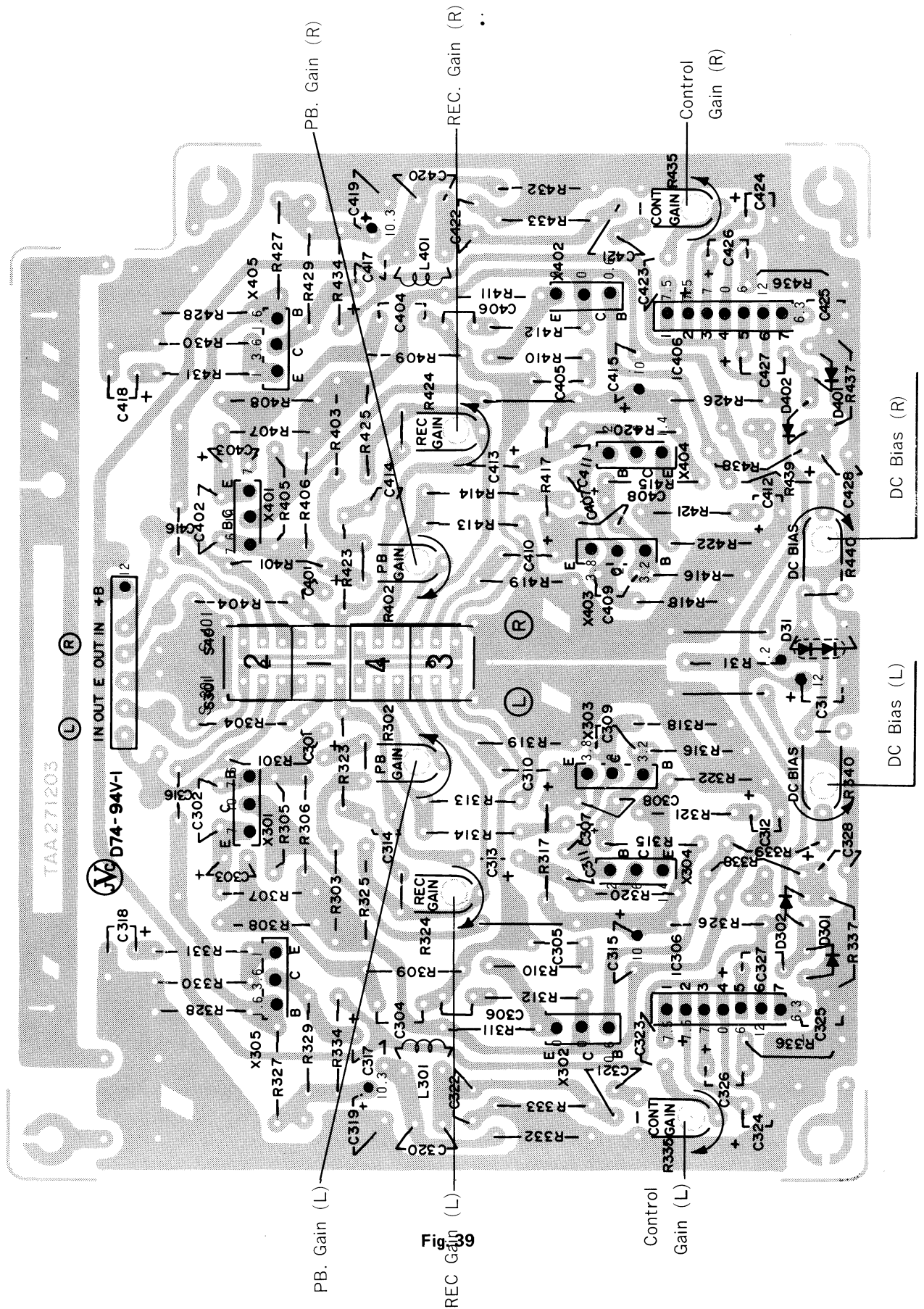


Fig 39

ANRS Circuit Board Parts List

Ref. No.	Part No.	Part Name	Remarks		Q'ty
S301,401	*TAA271203-01	Circuit Board			1
	QSS8201-102	Slide Switch			1
	*QMC0627-001	Plug Ass'y			1
R31	QRD142K-153	C. Resistor			1
R301,401	" -273	"			2
R302,402,324,424	QVP8A0B-014	V. Resistor			4
R303,403,325,425,329,429	QRD142K-472	C. Resistor	4.7k Ω	¼W	6
R304,404,308,408,318,418,328,428,338,438,339,439	" -473	"	47k Ω	"	12
R305,405	" -104	"	100k Ω	"	2
R306,406	" -334	"	330k Ω	"	2
R307,407	" -822	"	8.2k Ω	"	2
R309,409,316,416	" -274	"	270k Ω	"	4
R310,410	" -100	"	10 Ω	"	2
R311,411	" -562	"	5.6k Ω	"	2
R312,412	" -181	"	180 Ω	"	2
R313,413	" -683	"	68k Ω	"	2
R314,414	" -102	"	1k Ω	"	2
R315,415	" -564	"	560k Ω	"	2
R317,417	" -154	"	150k Ω	"	2
R319,419	" -823	"	82k Ω	"	2
R320,420	" -103	"	10k Ω	"	2
R321,421	" -101	"	100 Ω	"	2
R322,422	" -332	"	3.3k Ω	"	2
R323,423	" -183	"	18k Ω	"	2
R326,426,334,434	" -122	"	1.2k Ω	"	4
R327,427	" -224	"	220k Ω	"	2
R330,430	" -681	"	680 Ω	"	2
R332,432	" -123	"	12k Ω	"	2
R333,433	" -103	"	10k Ω	"	2
R335,435	QVP8A0B-024	V. Resistor			2
R336,436	QRD142K-390	C. Resistor	39 Ω	¼W	2
R337,437	" -333	"	33k Ω	"	2
R340,440	QVP8A0B-015	V. Resistor			2
C31	QEW41CA-107	E. Capacitor	100 μ F	16V	1
C301,401,303,403	QEB41EM-335	LLC E. Capacitor	3.3 μ F	25V	4
C302,402	QCS11HK-561	Ceramic Capacitor	560pF	50V	2
C304,404	QFM41HK-223	Mylar Capacitor	0.022 μ F		2
C305,405	" -104	"	0.1 μ F		2
C306,406	" -183	"	0.018 μ F		2
C307,407	QEE41EM-105	Tantal E. Capacitor	1 μ F	25V	2
C308,408,321,421	QCS11HK-471	Ceramic Capacitor	470pF	"	4
C309,409	" -101	"	100pF	"	2
C310,410	QEE41EM-335	Tantal E. Capacitor	3.3 μ F	"	2
C311,411	QCS11HK-270	Ceramic Capacitor	27pF	50V	2
C312,412,326,426	QEW41AA-476	E. Capacitor	47 μ F	10V	4
C313,413	QEW41CA-106	"	10 μ F	16V	2
C314,414	QCS11HK-181	Ceramic Capacitor	180pF	50V	2
C315,415	QEW41CA-476	E. Capacitor	47 μ F	16V	2
C316,416	QFM41HK-333	Mylar Capacitor	0.033 μ F	50V	2
C317,417	QEW41CA-475	E. Capacitor	47 μ F	16V	2
C319,419	" -106	"	10 μ F	"	2
C320,420	QCS11HJ-820	Ceramic Capacitor	82pF	50V	2
C323,423	QEW41EA-105	E. Capacitor	1 μ F	25V	2
C324,424	QEW41AA-106	"	10 μ F	10V	2
C325,425	QCS11HK-271	Ceramic Capacitor	270pF	50V	2
C327,427,328,428	QEB41EM-105	LLC E. Capacitor	1 μ F	25V	4
C322,422	QFM41HK-222	Mylar Capacitor	0.0022 μ F		2
L301,401	TAC000324-05	Inductor			2
X301,401,304,404	2SC1327 (TU)	Transistor			4
C302,402	2SC933FP	"			2
X303,403	2SA721 (TU)	"			2
X305,405	2SC828 (R)	"			2
IC306,406	TA7066P (BC)	IC			2
D31	MA26W	Varistor			1
D301,401,302,402	1S188FM	Diode			4

Switch Circuit Board

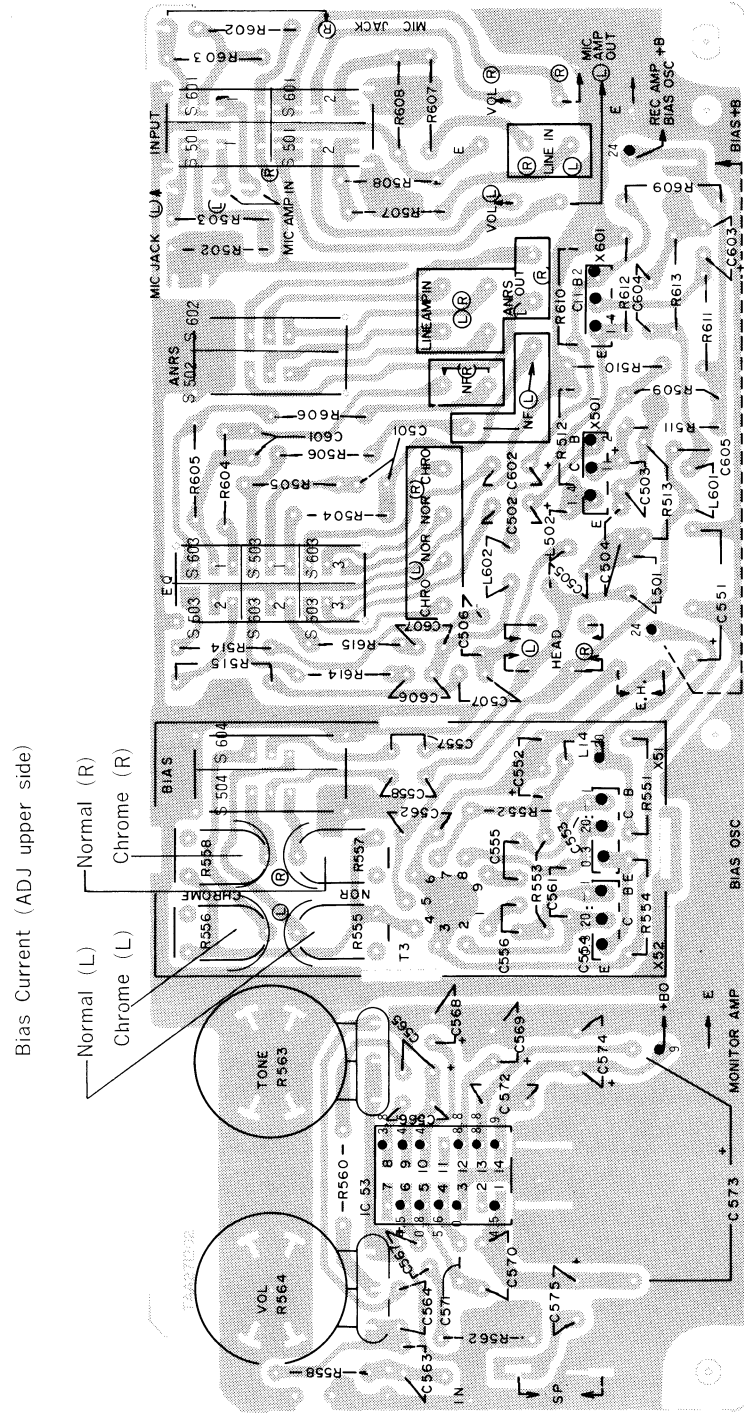


Fig. 40

Switch Circuit Board Parts List

Ref. No.	Part No.	Part Name	Remarks	Q'ty
	*TAA271202-01	Circuit Board		1
	E43727-002	Lapping Pin		32
	E40130-001	Tab		2
	EG9010-001	Tab		1
	QSL4324-001	Lever Switch	for INPUT	1

Ref. No.	Part No.	Part Name	Remarks	Q'ty
	QSL2218-111	Lever Switch	for ANRS	1
	*QSL2218-112	"	for BIAS	1
	*QSL6220-001	"	for EQ	1
	LPSP2606V	Screw		4
R563,564	*QVG9A2A-024	V. Resistor	for Tone, Volume	2
(Rec Amp)				
R502,602	QRD142K-122	C. Resistor	1.2k Ω ¼W	2
R503,603	" -103	"	10k Ω "	2
R504,604	" -334	"	330k Ω "	2
R505,605	" -272	"	2.7k Ω "	2
R506,606	" -332	"	3.3k Ω "	2
R507,607	" -823	"	82k Ω "	2
R508,608	" -683	"	68k Ω "	2
R509,609	" -684	"	680k Ω "	2
R510,610	" -823	"	82k Ω "	2
R511,611	" -682	"	6.8k Ω "	2
R512,612	" -821	"	820k Ω "	2
R513,613	" -153	"	15k Ω "	2
R514,614	" -820	"	82 Ω "	2
R515,615	" -560	"	56 Ω "	2
R50	QRD143K-681	C. Resistor	680 Ω "	1
C50	QEW41EA-107	E. Capacitor	100 μ F 25V	1
C501,601	QFM41HJ-153	Mylar Capacitor	0.015 μ F 50V	2
C502,602	QEW41CA-336	E. Capacitor	33 μ F 16V	2
C503,603	QEW41EA-105	"	1 μ F 25V	2
C504,604	QCS11HK-561	Ceramic Capacitor	560pF 50V	2
C505,605	QCS12HJ-151	"	150pF 500V	2
C506,606	QFM41HK-183	Mylar Capacitor	0.018 μ F 50V	2
C507,607	" -223	"	0.022 μ F "	2
L501,601	TAC000324-01	Inductor	18mH	2
L502,602	*TAC000324-01	"	5.6mH	2
X501,601	2SC828A (R)	Transistor		2
(OSC Circuit)				
T3	TAB265401-01	OSC Coil		1
R551	QRD142K-221	C. Resistor	220 Ω ¼W	1
R552,553	" -104	"	100k Ω "	2
R554	" -220	"	22 Ω "	1
R555,557	QVP8A0B-025	V. Resistor		2
R556,558	" -015	"		2
C551	QEW21EA-226	E. Capacitor	220 μ F 50V	1
C552	" -335	"	3.3 μ F "	1
C553,554	QCS11HK-391	Ceramic Capacitor	390pF "	2
C555,556	QFM41HK-272	Mylar Capacitor	0.0027 μ F "	2
C557,558	QCS12HK-221	Ceramic Capacitor	220pF 500V	2
C561	QEZ0001-472	Polypropylene Capacitor	0.0047 μ F	1
C562	" -822	"	0.0082 μ F	1
L14	T40442-002	Inductor	1mH	1
X51,52	2SC828A (RS)	Transistor		2
	*TAS271320	OSC Case (A)		1
	*TAS271479	" (B)		1
(Monitor Amp)				
R560	QRD142K-221	C. Resistor	220 Ω	1
R562	" -471	"	470 Ω	1
C563	QFM41HK-272	Mylar Capacitor	0.0027 μ F 50V	1
C564	" -123	"	0.012 μ F "	1
C565	QEW41EA-105	E. Capacitor	1 μ F 25V	1
C566	QCF11HP-102	Ceramic Capacitor	1000pF 50V	1
C567	QEW41CA-226	E. Capacitor	22 μ F 16V	1
C568	" -227	"	220 μ F "	1
C569	" -106	"	10 μ F "	1
C570,571	QCS11HK-561	Ceramic Capacitor	560pF 50V	2
C572	QFM41HK-154	Mylar Capacitor	0.15 μ F "	1
C573	*QEW21CA-477	E. Capacitor	470 μ F 16V	1
C574	QEW41AA-277	"	220 μ F 10V	1
C575	" -477	"	470 μ F "	1
C576	QCF11HP-103	Ceramic Capacitor	0.01 μ F 50V	1
IC53	LA4102	IC		1
C577	QCS11HK-471	Ceramic Capacitor	470pF 50V	1
R558	QRD142K-273	C. Resistor	27k Ω ¼W	1
R559	QRD143K-4R7	"	4.7 Ω "	1
C578	QFM41HK-153	Mylar Capacitor	0.015 μ F 50V	1
C579	QCS11HK-680	Ceramic Capacitor	68pF "	1
C580	QFM41HK-154	Mylar Capacitor	0.15 μ F "	1

Mechanical Components

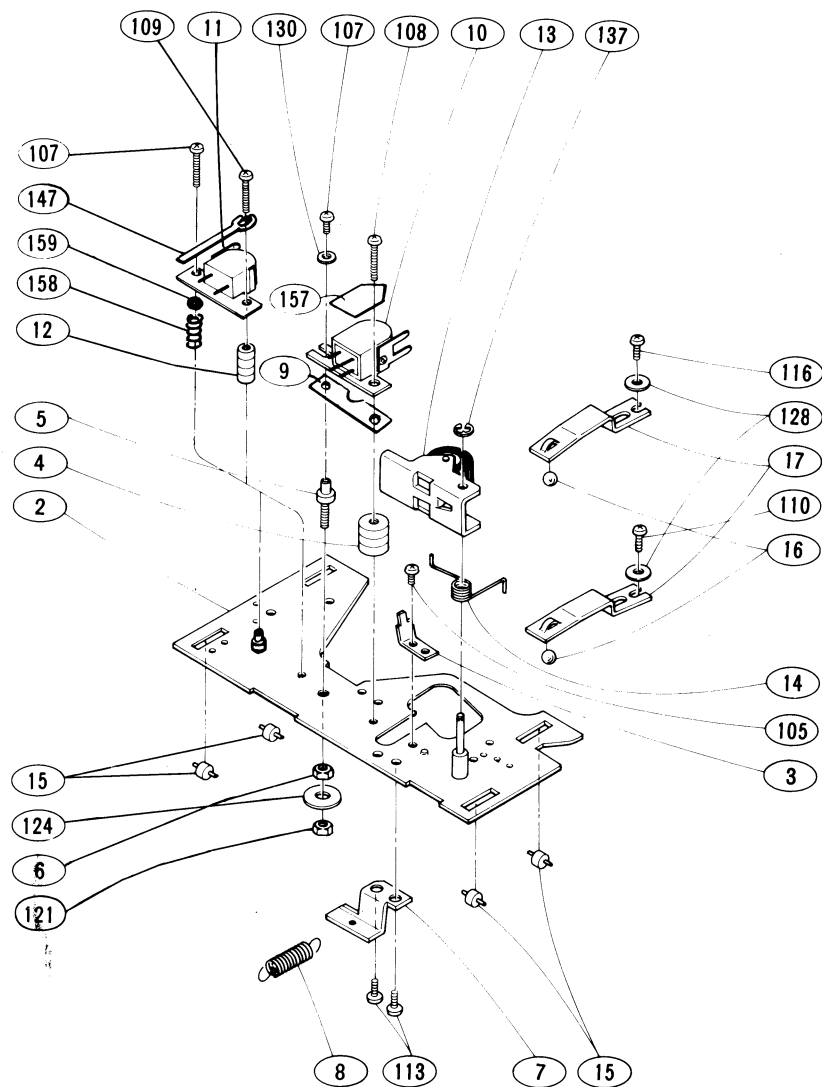


Fig. 41

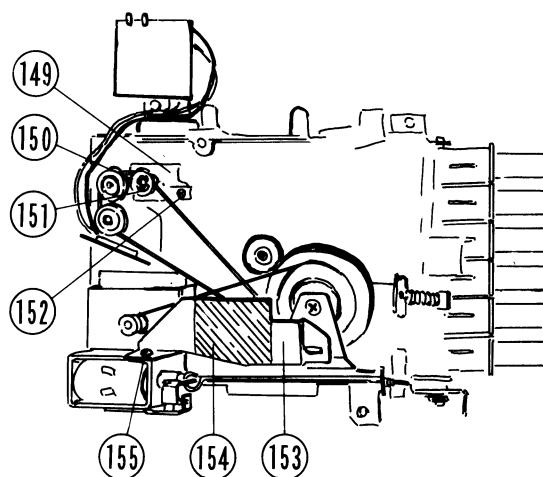


Fig. 42

Mechanical Components

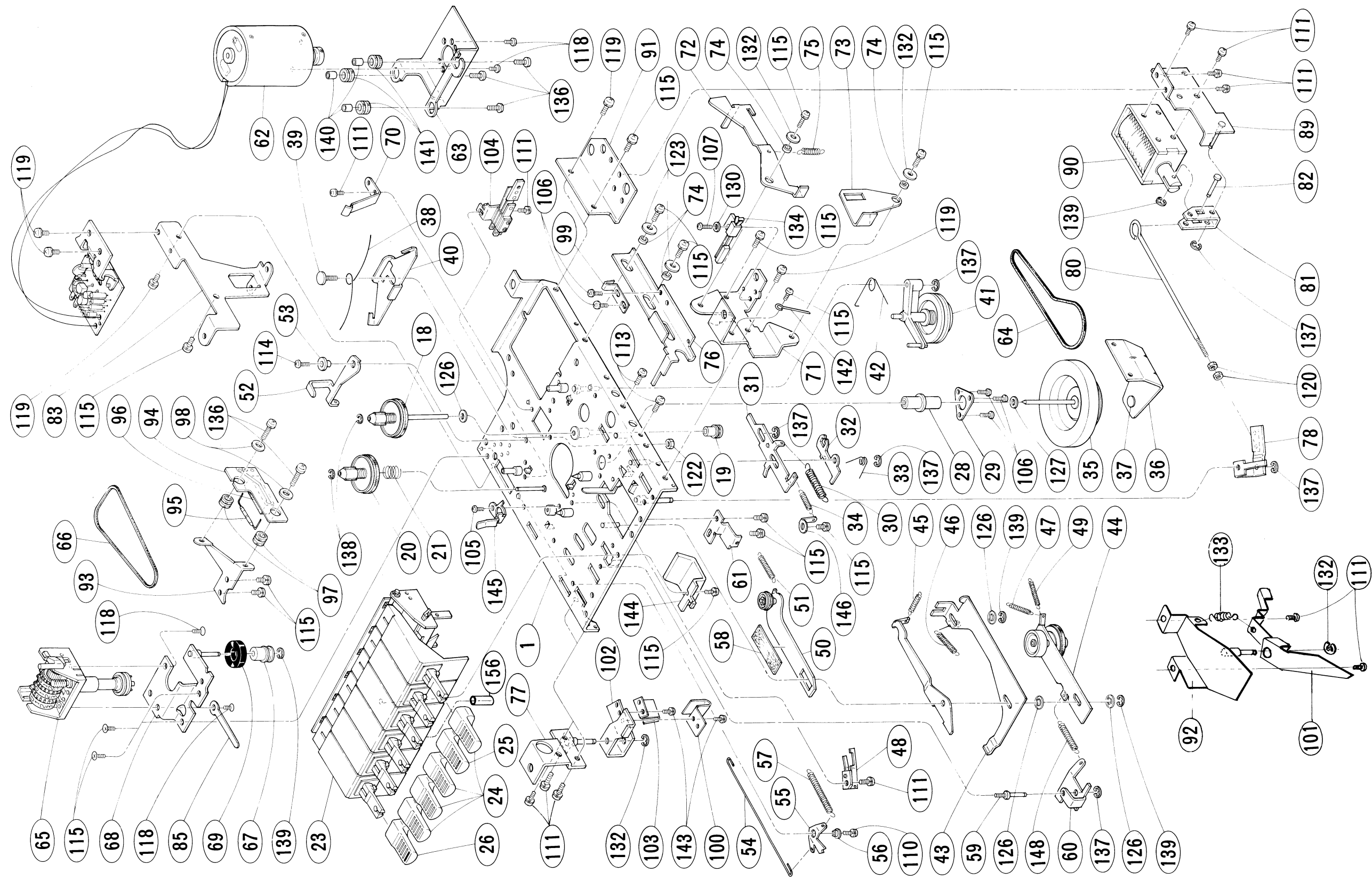


Fig. 43

Mechanical Component List

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	T30987-00F	Chassis Base Ass'y		1
2	T43081-00D	Head Panel Ass'y		1
3	T43080-001	Bracket		1
4	T45799-003	Head Stud		1
5	T42045-001	"		2
6	T42046-001	Special Nut		1
7	TFB267475-01	Head Panel Bracket		1
8	160508T	Spring		1
9	1310403T	R.P. Head Spring		2
10	THC037407-0A	R.P. Head Ass'y		1
11	THS265480-0A	E. Head Ass'y		1
12	TFH267424-01	E. Head Stud		1
13	3050485ZT	Pinch Roller Arm Ass'y		1
14	T45138-001	Pinch Roller Spring		1
15	T42057-001	Head Panel Roller		4
16	T41615-003	Bowl Bearing	3mm	2
17	2010303T	Head Panel Spring		2
18	T42674-00A	Reel Disk Ass'y (2)		1
19	TEP267464-01	Counter Drive Pulley		1
20	T42059-00C	Reel Disk Ass'y		1
21	T42051-009	Spring		1
22	TGT271322-0A	Push Button Case Ass'y		1
23	T43090-001	Push Button Case		6
24	TJB271506-0A	Push Button		4
25	" -OB	"		1
26	" -OC	"		1
27	T30300-135	Spring	for Cam	1
28	T45809-001	Capstan Metal Ass'y		1
29	T42071-001	Metal Stopper		1
30	T30300-120	Spring	Pause Lever – Button Lever	1
31	T43084-00C	Lever Ass'y		1
32	4180408T-01	Lock Plate		1
33	T43070-001	Spring		1
34	T42049 003	"		1
35	TEW267429-0B	Flywheel Ass'y		1
36	TFB267474-02	Flywheel Holder		1
37	2380905T	Thrust Bearing		1
38	T42076-001	Brake Arm Spring		6
39	T42077-001	Brake Arm Shaft		4
40	T42075-001	Brake Arm		1
41	TGP000465-0B	Take Up Idler Arm Ass'y		1
42	T45139-011	Take Up Wheel Spring		1
43	T42088-001	Brake Bar		1
44	TFB267511-0A	F.F. Idler Arm Ass'y		1
45	T30300-120	Spring	F.F. Idler – F.F. Lever	1
46	T42049-003	"	Brake Bar – F.F. Idler Arm	1
47	5850801T	"	F.F. Idler – F.F. Lever	1
48	T45822-002	F.F. Arm Guide Plate		1
49	T42049-023	Spring	Brake Bar – F.F. Idler Arm	1
50	T42098-00D	Rew Arm Ass'y		1
51	T42049-009	Spring	Brake Bar – REW Idler Arm	1
52	T45717-001	Kick Lever		1
53	T42105-001	Metal		1
54	T42106-001	Rec Rod		1
55	T42107-001	Rec lever		1
56	T42105-001	Metal		1
57	T42049-005	Spring		1
58	T40713-019	Cushion		1
59	T42109-001	F.F. Shaft		1

Ref. No.	Part No.	Part Name	Remarks	Q'ty
60	T43654-002	F.F. Lever (3)		1
61	T43068-001	Bracket		1
62	m207-00B	Motor Ass'y		1
63	TFB271487-01	Motor Bracket		1
64	T45625 001	Capstan Belt		1
65	T31060-00B	Countor Ass'y		1
66	T45786-002	Counter Belt		1
67	TFH271445-01	Magnet Pulley		1
68	TFB271443-01	Countor Bracket		1
69	TDZ271434-01	Magnet		1
70	T1490105T-002	Spring Plate	for Eject	1
71	TFB271446-01	Eject Lever Bracket		1
72	TFB271447-01	Eject Lever		1
73	TFB271448-01	Eject Kick Lever		1
74	T30302-036	Coller		4
75	481008T-01	Spring		1
76	TFB271449-01	Slide Bar		1
77	TFB271457-0A	Record Bracket Ass'y		1
78	TFB271470-01	Auto Stop Lever		1
79	T30300-081	Spring	for Auto Stop Lever	1
80	TFW271475-01	Auto Stop Rod		1
81	TFB271472-01	Auto Stop Arm		1
82	TFH271471-01	Rod		1
83	TFB271315-01	C. Board Bracket		1
84	S4709-001	Wire Clamp		1
85	04224-0-2	Vinyl Tube		1
86	04228-L-2.3	"		1
87	04224-L-1.7	"		2
88	T3030L-100	Spring	for Solenoid	1
89	TFB271474-01	Solenoid Bracket		1
90	T44546-001	DC. Solenoid		1
91	TFB271450-01	Side Bracket		1
92	TFB271456-0A	Bracket Ass'y	ANRS	1
93	TFB271413-01	Read Switch Bracket		1
94	TAA271402-01	Read Switch C. Board		1
95	TDS271409-01	Read Switch		1
96	TER271414-01	Spacer		1
97	53492	Rubber Bushing		4
98	T30302-063	Coller		2
99	TFP271491-01	Switch Spring		1
100	TFP271490-01	ANRS Spring Plate		1
101	TFB271453-01	Record Lever	for ANRS	1
102	TFB271458-01	"	for REC/PB	1
103	TFP271459-01	REC Spring Plate		1
104	T30515-00B	Switch Ass'y	for Power SW	1
105	SPSP2003Z	Screw		1
106	SPSP2004Z	"	for SW Spring	1
107	SPSP2006Z	"	for Power SW	2
108	SPSP2010Z	"		1
109	SPSP2014Z	"		1
110	SPSP2604Z	"		1
111	LPSP2604Z	"	ANRS Spring Plate, Muting SW Motor SW, FF Arm Guide Plate	9
112	SPSP2605Z	"		2
113	LPSP2605Z	"	Flywheel Holder	6
114	SPSP2606Z	"	Kick Lever	6
115	LPSP2606Z	"	Lead SW Bracket	8
116	SPSP2608Z	"		1
117	SPSP2610Z	"		2

Ref. No.	Part No.	Part Name	Remarks	Q'ty
118	SPSP3004ZS	Screw		5
119	LPSP3006ZS	"		4
120	NNB2000	Nut		2
121	NNB2600N	"		1
122	NTB2600N	"	Brake Arm	1
123	Q03091-130	Washer		4
124	Q03091-150	"		1
125	Q03093-115	"		2
126	Q03093-609	"		4
127	Q03093-612	"		1
128	WNB2600N	"		2
129	WNS3000Z	"		3
130	WNB2000	"	PAUSE SW, SW Spring	4
131	WNB2600	"	Lead SW Plate	2
132	REE3000	E. Ring	Record Lever	2
133	T30300-131	Spring	ANRS Record Lever	1
134	TDS000334-01	Switch	Pause SW	1
135	SPSP2008Z	Screw	"	1
136	LPSP2610Z	"	Lead SW Plate, Motor Bracket	5
137	REE2000	E. Ring	Lock Plate, Takeup Ass'y, Pinch Roller, Lever Ass'y	4
138	REE1200	"	Reel Disk	2
139	REE1500	"	Brake Bar	4
140	581009T	Motor Collar		3
141	581006T	Motor Rubber		3
142	T43088-001	Spring		1
143	LPSP2004Z	Screw		2
144	TFB271486-01	Button Case Bracket		1
145	T44181-001	Cassette Guide		1
146	51739-002	Lag		1
147	T65640-001	Wire Clamp		1
148	T42049-008	Spring		1
149	TGB271497-0A	Pulley Bracket Ass'y		1
150	TFH271445-01	Magnet Pulley		1
151	REE2000	E. Ring		1
152	LPSP2004Z	Screw		1
153	TAS271505-01	Shield Plate		1
154	TJN271504-01	Spacer		
155	LPSP2603Z	Screw		1
156	Q04109-0-0.7	Vinyl Tube		1
157	THC037417-01	Head Plate		1
158	480408T	Spring		1
159	WNS2000N	Washer		1

Enclosure Assembly

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1~9	TJM271101-0B	Top Panel Ass'y		1set
1	TJM271102-01	Top Panel		1
2	T40838-001	Count Plate		1
3	T47610-001	Refraction Plate		1
4	TJN271422-01	Speaker Net		1
5~6	TJG270451-0D	Cassette Lid Ass'y	Top Panel Ass'y	1set
5	TJG270201-05	Cassette Lid		1
6	TJE271424-01	Finder		1
7	TFB271425-01	Lid Holder		2
8	T47004-002	Spring		1
9	T48181-001	Bracket		1
10	QXM2241-002	Mark Ass'y		1
11	TJP271206-02	Control Plate		1
12	TJL271485-01	Mark		1
13	TJH271426-0B	Belt Holder Ass'y		2set
15	TJP271310-01	Side Plate	(Right)	1
16	TJP271311-01	"	(Left)	1
17~20	TJM271207-0A	Front Panel Ass'y		1set
17	TJM271208-01	Front Panel	Front Panel Ass'y	1
18	TJB271429-01	Eject Button		1
19	T30301-105	Spring		1
20	T42006-001	Bracket		1
21	TJP271430	Front Plate (1)		1
22	TJP271312-01	" (2)		1
23~28	TJM271209-0A	Bottom Cover Ass'y		1set
23	TJM271103-01	Bottom Cover	Bottom Cover Ass'y	1
24	TJN271464-01	Net		2
25	T41240-001	Battery Contact	(+)	2
26	T41347-00A	Battery Contact Ass'y	(-)	2
27	T44576-001	Tape		1
28	T42479	Foot		4
29~30	TJM271432-0A	Battery Cover Ass'y		1
29	TJM271313-01	Battery Cover	Battery Cover Ass'y	1
30	TJN271433-01	Cushion		1
31	TJK267411-03	Memory Cap		5
32	TJK271463-0A	Knob Ass'y		4
33	TJK271417-0A	Master Knob Ass'y		1
34	TJL000336-01	Name Plate	CD-1635E	1
	" -02	"	CD-1635B	1
	" -03	"	CD-1635U	1
35	SBSB3008Z	Tapping Screw		4
36	SBSB2608Z	"		1
37	SSSP3006ZS	Screw		4
38	TAS271502-01	Shield Board		1
39	TJN271411-01	Cushion		2
40	TJN270469-01	Lid Cushion	for Top Panel, Bottom Cover	2
41	TJN271501-02	Himelon Seet	for Bottom Cover	3
42	" -03	"		5
43	" -04	"		3
44	" -05	"		2
45	" -06	"		5
46	TJN265423-01	Panel Cushion		1

Enclosure Assembly

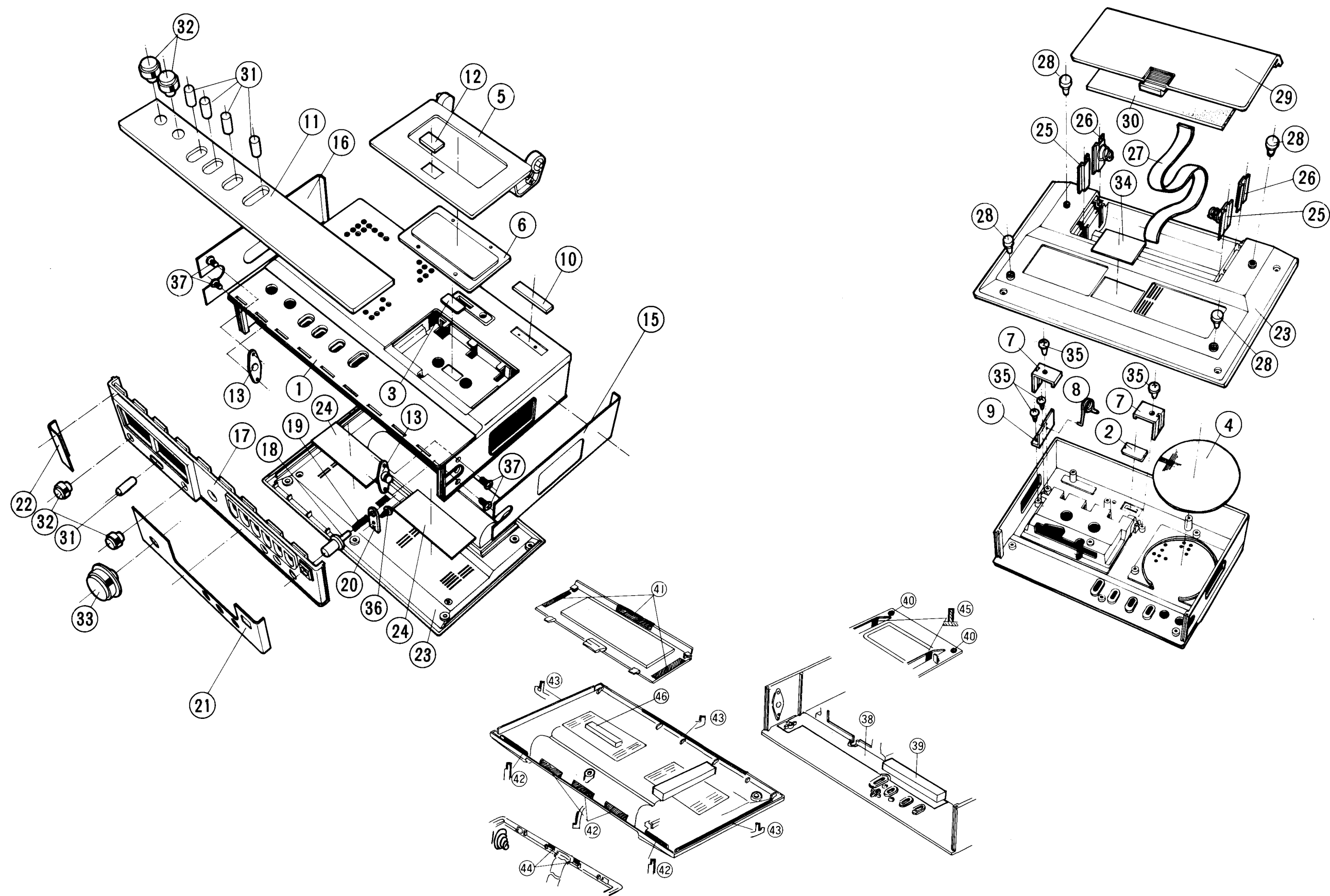


Fig. 44

Electrical Parts Except Circuit Board Parts

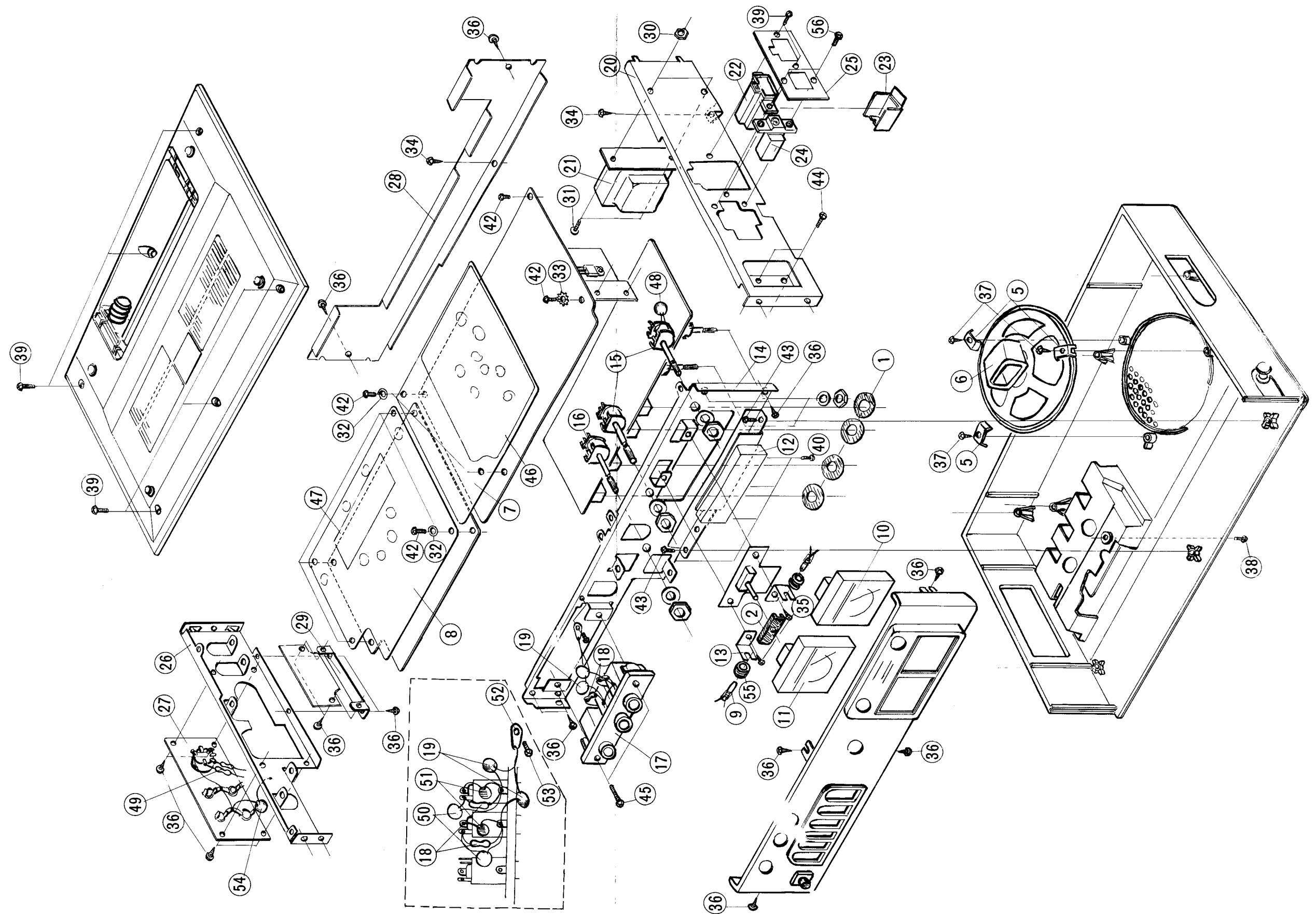


Fig. 45

Electrical Parts Except Circuit Board Parts List

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	TJN271489-01	Blind		4
2	TJN271492-01	"		1
5	T42437-001	Bracket	Speaker	3
6	SK2119ZME	Speaker	10cm 4Ω	1
7	TAS271407-01	Shield Board	for Main C. Board	1
8	TAS271408-01	"	for ANRS C. Board	1
9	T46729-002	Lamp	6.3V 70mA	2
10	TDM265311-02	Level Meter	Left CH	1
11	TDM265311-03	"	Right CH	1
12	TJN271411-01	Cushion		1
13	TFB271412-01	Lamp Bracket		2
14	TFB271317-0A	Front Bracket Ass'y		1set
15	QVF1A4B-054	V. Resistor	R146,246 Sub Rec	2
16	QVD2A4A-254	"	R147,148 Main Rec	1
17	TAJ031304-02	Jack Ass'y	MIC & PHONES	1
18	QRD143K-102	C. Resistor	R501,502 1kΩ ¼W	2
19	QCF41EZ-104	Ceramic Capacitor	C101,201 0.1μF	2
20	TFB271303-01	Left Side Bracket	CD-1635U, CD-1635, CD-1635A	1
	TFB271303-02	"	CD-1635E,B	1
21	TAP288301-01	Power Transformer	CD-1635U	1
	TAP286301-01	"	CD-1635E	1
	TAP287301-01	"	CD-1635B	1
	TAP303301	"	CD-1635	1
22	QMC0262-001	AC Jack	CD-1635U, CD-1635, CD-1635A	1
	QMC0263-001	"	CD-1635E,B	1
23	TDZ0001463-01	Cover	CD-1635U, CD-1635, CD-1635A	1
	V44399-00A	"	CD-1635E,B	1
24	TAJ271306-01	Ext. Batt. Jack		1
25	TJP271403-01	Jack Plate		1
26	TFB271304-01	Right Side Bracket		1
27	TAJ271307-01	Jack Ass'y	LINE, DIN	1
28	TFB271305-01	Back Side Bracket	CD-1635E,B,A, CD-1635	1
	TFB271305-02	"	CD-1635U	1
29	TFB271476-01	Switch Bracket	for Muting SW	1
30	NTB3000S	Nut	for Power Transformer	2
31	DPSP3008ZS	Screw	"	2
32	VNB3000N	Washer	for Main C. Board, ANRS C. Board	7
33	WBS3000	T. Lock Washer	for Main C. Board	1
34	SBSB3006C	Tapping Screw	for Top Panel	5
35	SBSB3006V	"	for Check C. Board	2
36	SBSB3006Z	"	Front Panel, Spring Plate, Front Bracket, Jack (LINE, DIE), Rear Bracket Muting SW Bracket	20
37	SBSB3008Z	Screw	for Speaker	3
38	SPB2004B	"	for Cassette Holder	1
39	SPBP3008BS	"	for Back Cover	8
40	LPSP2006VS	"	Ext. Battery Jack for SW C. Board	4
42	LPSP3006VS	"	for Main C. Board, ANRS C. Board SW C. Board	9
43	LPSP3006CS	"	Top Panel	3
44	LPSP3008VS	"	Main C. Board	2
45	LPSP3014ZS	"	Jack	2
46	TJL271493-01	Label (A)	Main C. Board	1
47	TJL271494-01	" (B)	ANRS C. Board	1
48	QCF11HP-103	Ceramic Capacitor	C30 0.01μF master volume	1
49	QRD143K-822	C. Resistor	8.2kΩ	2
50	QCF11HP-222	Ceramic Capacitor	2200pF	2
51	QCS11HK-821	"	820pF	2
52	50242-2	Lug		1
53	LPSP2606Z	Screw		1
54	QCF11HP-103	Ceramic Capacitor	Left Bracket & Jack	1
55	53492	Rubber Bushing		2
56	SPBP2606B	Screw	for AC Jack CD-1635U,A, CD-1635	2

Ref. No.	Part No.	Part Name	Remarks	Q'ty
56	SPBP2610B	Screw	for AC Jack CD-1635E,B	2
57	TAZ000452-02	Seal	for P. Transformer CD-1635E,B	1
58	FG9060-001	Wire Connector	CD-1635E,B	1
59	TFB288401-01	Socket Bracket	CD-1635E,B	1
60	LPSP3006ZS	Screw	for Socket Bracket "	2
61	QMC0306-001	Plug Ass'y	"	1
62	QMC0733-001	Socket Ass'y	"	1
63	LPSP3008ZS	Screw	for Socket "	2

Packing

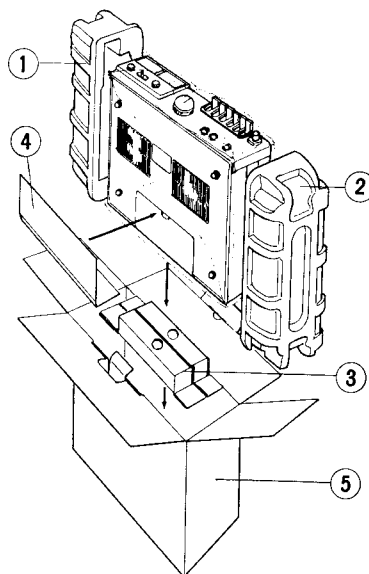


Fig. 46

Packing List

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1~5	TKB271323-0B	Packing Case Ass'y		1
1	TKC271104-01	Cushion (L)	Left	1
2	TKC271105-01	" (R)	Right	1
3	TKB271323-04	Battery Case		1
4	TKB271323-05	Spacer		1
5	TKB271323-06	Case		1
	T6800-00Q	Envelope	for Set	1
	AP4056A-046	"	for Power Cord	1
	AP4056A-077	"	for Instruction Book	1

Standard Schematic Diagram of CD-1635, A/B/E/U

Note:

- * Subject to change without prior notice.
- * All resistance values are shown in ohm (K=1,000, M=1,000,000)
- * All capacitance values are shown in μF ($\text{p}=\mu\mu\text{F}$)

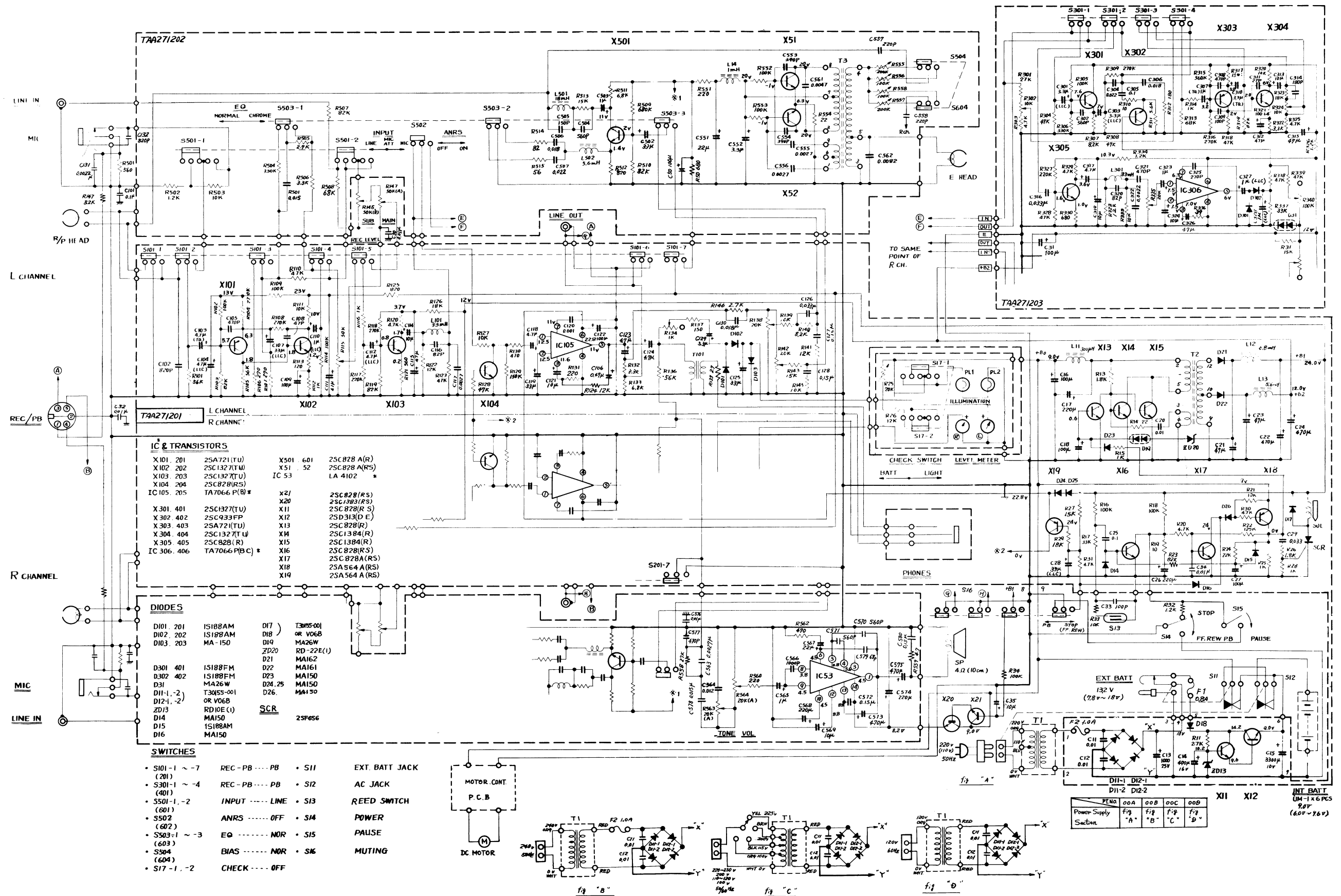
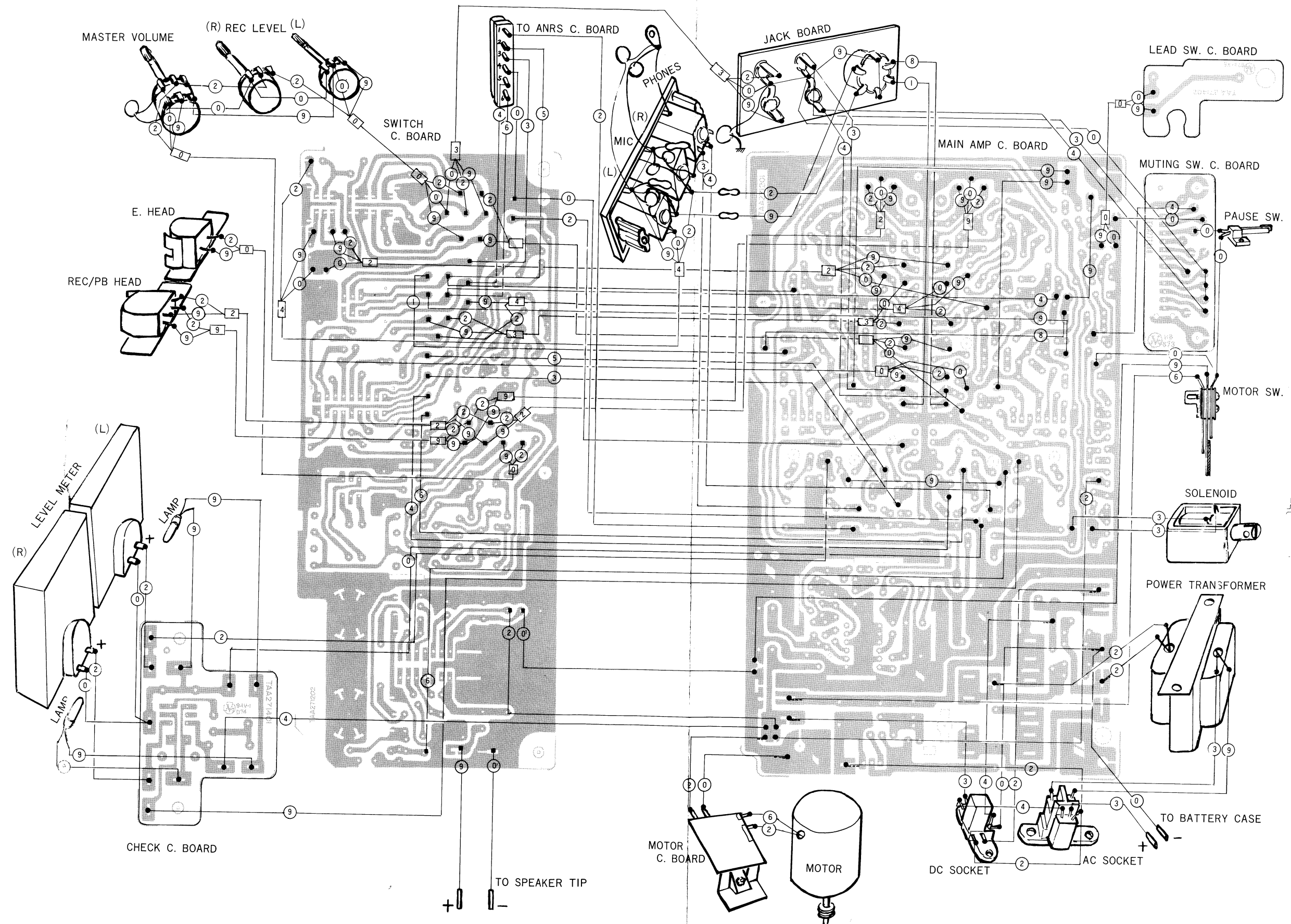
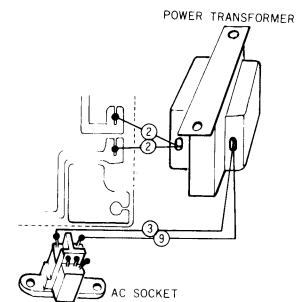


Fig. 47

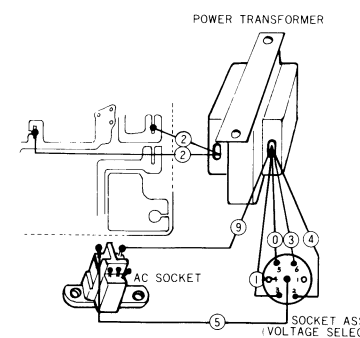
Wiring



CD-1635,A/B/E



CD-1635U



Colour code show below

- 1 — Brown
- 2 — Red
- 3 — Orange
- 4 — Yellow
- 5 — Green
- 6 — Blue
- 7 — Violet
- 8 — Grey
- 9 — White
- 0 — Black

Accessories

Part No.	Part Name	Remarks	Q'ty
TLC271319-0A	Band Ass'y		1set
TLJ000458-01	ANRS Seal		1
T46965-002	Demo Cassette	(DT626)	1
CN201	DIN Cord Ass'y	CD-1635B,E	1
T30046-00A	Pin Cord Ass'y	CD-1635U	2
T47796-00B	Head Cleaning Stick		2
TLT000429-01	Caution Card	for T47796-00B	1
AP4056A-024	Envelop		1
QMP9017-006	Power Cord	CD-1635B	1
QMP3950-183	Power Cord	CD-1635E,U	1
QZL1002-002	Warning Label	for QMP9017-006, CD-1635B	1
T7145EGFO	Instruction Book		1
BT20013	Guarantee Certificate	CD-1635B	1

* Design and specifications subject to change without notice.

JVC

Supplementary **SERVICE MANUAL**

MODEL

CD-1636/C

CD-1635MarkII

(CD-1635-2A/B/E/U)

PORTABLE STEREO CASSETTE DECK

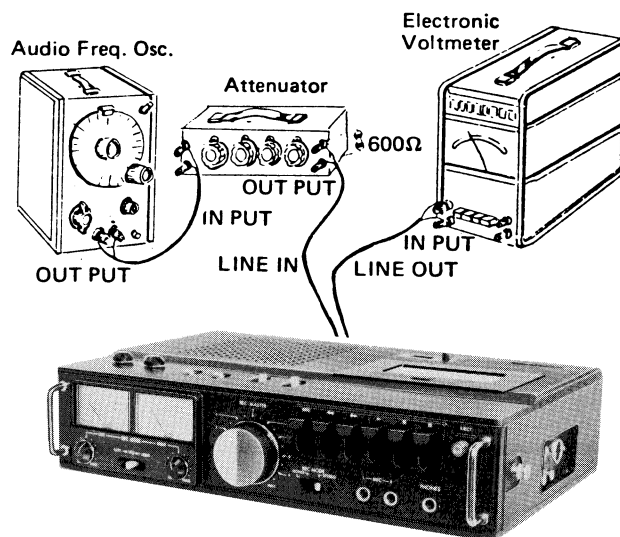


Main Adjustments

[I] Equipment and measuring instruments used for adjustment.

Electrical adjustment

- 1) Electronic voltmeter
- 2) Audio frequency oscillator
(range; 50–20kHz and output 0dB with impedance 600Ω)
- 3) Attenuator
- 4) Standard tapes for REC/PB
Maxell UD – for "NORM" position } or equivalent
TKD SA – for "CrO2" position }
- 5) Reference tapes for playback (JVC Test Tape)
VTT-658 (for head azimuth adj.)
VTT-664 (for Reference level 1kHz)
VTT-675N (for playback frequency response)
- 6) Resistors
100Ω (for measurement of the bias current)
600Ω (for attenuator matching)



CD-1636/C
CD-1635-2A/B/E/U

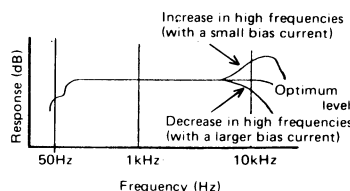
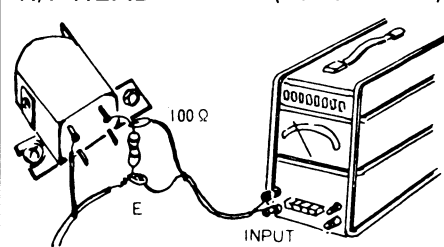
[II] Electrical circuit adjustment procedure

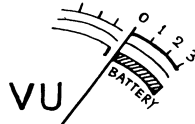
Adjustment should be performed in the order of steps 1,2,3.

Playback system

Step	Item	Adjustment	Adjusting point	Standard Value	Remarks
1	Level meter deflection	1. Set the deck in the record mode. 2. Input 1kHz signals to MIC or LINE IN jacks (with a level of -60dBs (0.78mV) approx. for MIC input or -10dBs (240mV) approx. for LINE IN input.) Adjust the recording volume controls so that the voltage across LINE OUT is -3.5dBs (518mV). 3. Adjust two semi-fixed variable resistors R134(L-ch) R234(R-ch) so that the level meters indicate zero VU.	R134 R234	VU meter reading: 0	Perform the adjustment when the parts are replaced.
2	Play back level	Adjust R115 and R215 to obtain zero VU meter reading using reference tape VTT-664 (old ref. no. TMT-6009). Set equalizer switch in "NORMAL" position and turn off ANRS switch when adjusting play back level.	R115 R215	VU meter reading: 0	1. Adjust reproduction level when heads are replaced. 2. Make this adjustment after making sure level meter deflection angle is correct.
3	Checking the playback frequency response	Play back the VTT-675N test tape. Check to see if the outputs at the frequencies conform to the standard levels.		Standard frequency: 1kHz "NORM" position; +2.5dB±3dB at 63Hz 0±3dB at 10kHz "CrO2" position +2.5dB±3dB at 63Hz -4.5dB±3dB at 10kHz	The 1kHz output with the equalizer switch set to NORMAL refers to CrO2 position.

Recording system

Step	Item	Adjustment	Adjusting point	Standard value	Remarks
1	Checking record/playback frequency response	Record 1kHz, 50Hz and 10kHz signals at an input level of 0VU -20dB. Play back the tape. Check to see that the 50Hz and 10kHz signal output deviations fall within the standard range, using the 1kHz signal output as a reference. (It is basically desirable that the 1kHz, 50Hz and 10kHz signal outputs are the same.)		Reference frequency; 1kHz With a normal tape 0±3dB at 50Hz 0±3dB at 10kHz With a chrome tape 0±3dB at 50Hz 0±3dB at 10kHz	This checking should be performed for normal and chrome tapes and for both right and left channels. Adjustment is performed with the semi-fixed resistors for bias current adjustment.
2	Recording bias	Record 1kHz, 50Hz and 10kHz signals at an input level of 0VU -20dB. Play back the tape. Adjust R555 and R557 (for a normal tape), R556 and R558 (for a chrome tape) until the indicated deviation of the 10kHz signal output from the 1kHz signal output becomes 0.	For normal tape R555,557 For chrome tape R556,558	Output deviation: 0	1. Bias current adjustment for a cassette deck should generally be performed referring to the record/playback frequency response. This is because the frequency response of a cassette deck depends more greatly upon the bias current than does that of an open reel deck. The current measuring method described below is an alternative one. 2. If the bias current is not properly adjusted, the record and playback characteristics become as shown below. 
		Alternative method 1. Set the deck in the record mode. 2. Connect a 100Ω resistor in series with ground wire of head (recording mode). 3. Connect the Electronic voltmeter across the resistor, and measure its voltage. R/P HEAD (E. voltmeter)  If no measuring apparatus is available, check in the following way. Music sound is not sonorous in the high range on playback: bias current is too high. Music sound is also sonorous in the high range on playback but distorted: bias current is too low.	NORM: R555,557 CrO2: R556,558 (BIAS ADJ)	Approx. 37mV Approx. 47mV	

Step	Item	Adjustment	Adjusting point	Remarks
3	Recording level	A: Adjustment for normal tape (Use JVC standard tape.) 1. Set the deck in the "NORM" record mode. 2. Input 1kHz signals to MIC or LINE IN jacks and set recording level to zero VU. 3. Adjust R142 and R242 till play back level is zero VU when the tape is played back. B: Adjustment for CrO₂ tape (Use JVC standard tape.) 1. Set the deck in the "CrO₂" record mode. 2. Input 1kHz signals to MIC or LINE IN jacks and set to recording level to zero VU. 3. Adjust R138, and R238 till play back level is zero VU when the tape is played back.	R142,242 (REC LEVEL — NORM) R138,238 (REC LEVEL — CHROME)	1. This adjustment is necessary when heads are replaced. 2. Make this adjustment after adjusting level meter deflection angle, play back level and recording bias current. 3. Set EQ and BIAS switches according to type of tape used. 4. Turn off ANRS switch.
4	ANRS circuit	1. Disconnect power connection receptacle of bias oscillator so that oscillator does not operate. (red wire) 2. Set the deck in the record mode. 3. Input 1kHz -10dBs (245mV) signals to LINE IN jacks adjust the recording volume controls so that the voltage across LINE OUT is -0.5dBs (732mV). 4. Turn R335 and R435 (CONT GAIN) and R340 and R440 (DC BIAS) in the opposite direction to the marking. 5. Adjust R324 and R424 so that level does not change when ANRS is turned on and off, and turn on ANRS. 6. Input 1kHz, -50dBs (2.45mV) signals to LINE IN. (Attenuate input signal 40dB more.) Adjust R340 and R440 so that voltage across LINE OUT is -35dBs (13.8mV) 7. Input 5kHz -30dBs (24.5mV) signals to LINE IN. Adjust R335 and R435 so that voltage across LINE OUT is -17dBs (109.5mV) 8. Repeat steps (5) through (7). 9. Turn ANRS switch in "Super" position when input 10kHz -10dBs (245mV) signals to LINE IN. Check output levels are -6.5dBs (367mV) ±2dB. 10. Connect receptacle of bias oscillator disconnected in step (1). 11. Play reference tape VTT-664 and adjust R302 and R402 so that level does not change when ANRS is turned on and off.	R324,424 (REC GAIN) R340,440 (DC BIAS) R335,435 (CONT GAIN) R302,402 (PB GAIN)	
5	Battery check	1. Apply exactly 6V to battery contacts and switch machine to play or fast forward. 2. Set battery check switch in "CHECK" position and adjust so that meter pointer deflects to the beginning end of green area.	R25	Do not mistake one polarity for the other. 

JVC

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